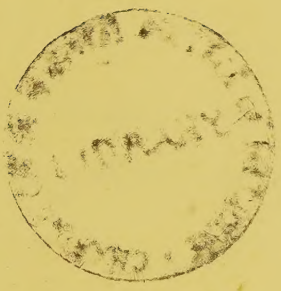
LIBRARY
OF THE
Charing Cross Hospital Medical School.

Case 2 V
Shelf B 6
No. 13

SHL
WITHDRAWN



BRAITHWAITE'S RETROSPECT.

VOL. LV, JANUARY—JUNE, 1867.

Digitized by the Internet Archive
in 2026

https://archive.org/details/retrospect-of-medicine_january-june-1867_55

THE

RETROSPECT OF MEDICINE:

BEING

A HALF-YEARLY JOURNAL,

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.

EDITED BY

W. BRAITHWAITE, M.D.,

LATE LECTURER ON MIDWIFERY AND THE DISEASES OF WOMEN AND CHILDREN AT THE LEEDS SCHOOL OF MEDICINE, ETC.

AND

JAMES BRAITHWAITE, M.D. LOND.

VOL. LV. JANUARY—JUNE,

1867.

LONDON:

SIMPKIN, MARSHALL, AND CO.

EDINBURGH: OLIVER AND BOYD. DUBLIN: HODGES AND SMITH.

MDCCCLXVII.

Letters for the Editors, to be addressed

Dr. Wm. Braithwaite, Clarendon House, Clarendon Road, Leeds; *or*

Dr. James Braithwaite, Clarendon Road, Leeds.

Parcels of Books, &c., to

Messrs. Simpkin, Marshall, & Co., London.

D. I. ROEBUCK, PRINTER, 14, TRINITY STREET, LEEDS.

CONTENTS OF VOL LV.

SYNOPSIS.

PRACTICAL MEDICINE.

DISEASES AFFECTING THE SYSTEM GENERALLY.

ARTICLE.	AUTHOR.	PAGE.
1 On the Diarrhœa of Enteric or Typhoid Fever ..	*Dr. George Johnson*	1
2 On the Use of the Sulphite of Magnesia in the Treatment of Zymotic Diseases	*H. R. De Ricci, Esq.*	3
3 On the Internal Use of Tartar Emetic in Acute Inflammations	*Dr. John Spender*	4
4 The Comparative Value of Disinfectants	*Dr. Letheby*	7
5 On the Treatment of Primary Cancer	*Charles W. Moore, Esq.*	8
6 Large Cancerous Tumour of the Neck and Face Treated by Injection of Acetic Acid	*Dr. Broadbent and Dr. Randall*	9
7 A New Instrument for Injecting Cancerous Tumours of the Uterus and Rectum	*T. J. Ashton, Esq.*	10
8 Injection of Scirrhus with Acetic Acid	*Peter Stewart, Esq.*	11
9 On the Diagnostic Value of the Retracted Nipple as a Symptom of Disease of the Breast	*Thos. Bryant, Esq.*	12
10 On Pyæmia	*W. S. Savory, Esq.*	18
11 On Scrofulous Diseases of the External Lymphatic Glands, and their Treatment by Iodine and other Local Stimulants	*Dr. Thomas Balman*	51

DISEASES OF THE NERVOUS SYSTEM.

12 Two Cases of Traumatic Tetanus Successfully Treated with the Ordeal Bean of Calabar	*Dr. Eben. Watson, M.A.*	54
13 Idiopathic Tetanus — Treatment by Tobacco and Nicotine	*Dr. Lyons*	60
14 Case of Traumatic Tetanus Successfully Treated by the Direct Application of Infusion of Tobacco ..	*John B. Junor, Esq.*	62

DISEASES OF THE NERVOUS SYSTEM, (CONTINUED.)

ARTICLE.	AUTHOR.	PAGE.
15 On the Treatment of Delirium Tremens by Indian Hemp	*Henry J. Tyrrell, Esq.*	65
16 Delirium Tremens—Treatment by Capsicum	*Dr. Lyons*	66
17 Case of Pure Uncomplicated Double Bell's Paralysis	*Do.*	66
18 Case of Hysterical Chorea	*Dr. Murchison*	68
19 On Faradisation and Galvanism	*W. H. Sandham, Esq.*	69
20 Electricity as a Tonic in Anæmia, Dyspepsia, and General Debility	*Dr. G. M. Beard*	72

ORGANS OF CIRCULATION.

21 Remarks on Chlorosis and Hemorrhage	*Sir H. Marsh, M.D.*	75
22 On Epistaxis	*Do.*	82
23 On the Diagnosis of Obstructive Mitral by a Presystolic Bruit	*Dr. Peacock*	88

ORGANS OF RESPIRATION.

24 What is Tubercle?	*Med. Times and Gazette*	89
25 On Gouty Bronchitis	*Dr. E. H. Greenhow*	93
26 On Pneumonia	*Dr. A. T. H. Waters*	105
27 On the Treatment of the Advanced Stage of Croup	*Dr. E. Watson, M.A.*	115
28 On Nervous Asthma	*Bamberger*	118
29 On the Treatment of Hooping-Cough with Hydrophenyl, or Benzine	*Dr. Lochner*	124
30 A Case of Resuscitation after Two Hours' Apparent Death by Drowning	*John Dennan, Esq.*	125
31 On Fatty Degeneration of the Diaphragm	*G. W. Callender, Esq.*	126

ORGANS OF DIGESTION.

32 On Diphtheria	*Dr. W. W. Campbell*	128
33 On Carbolic Acid in Diphtheria	*C. Sedgwick, Jun., Esq.*	131
34 Beneficial Effect of Belladonna in a Case of Severe Colic and Constipation	*Dr. Murchison*	132
35 On Enlargements of the Liver	*Do.*	133

URINARY ORGANS.

36 On the Treatment of Diabetes Mellitus	*Sir H. Marsh, M.D.*	137
37 A Sediment Tube for the more readily Collecting from the Urine Tube-Casts and other Objects for Microscopic Examination	*Dr. W. R. Basham*	146
38 Moveable Kidney		147

SURGERY.

AMPUTATIONS, FRACTURES, &c.

ARTICLE.	AUTHOR.	PAGE.
39 On a New Method of Treating Compound Fractures, Abscess, &c.	*Joseph Lister, Esq.*	149
40 On Amputation at the Shoulder-Joint	*James Spence, Esq.*	172
41 On Excision of the Knee-Joint, and the Employment of a New Apparatus in the After-Treatment ..	*Dr. P. Heron Watson*	175
42 On Cases that Bone-Setters Cure	*James Paget, Esq.*	185
43 On a New Styptic and Adhesive Fluid—Styptic Colloid	*Dr. B. W. Richardson*	192

ORGANS OF CIRCULATION.

44 Notes on the Progress of Acupressure	*Sir J. Y. Simpson*	205
45 Note on Acupressure	*Lawson Tait, Esq.*	208
46 On Acupressure as Applied to "Street Surgery" ..	*Dr. James Dunlop*	210
47 On a Case of Popliteal Aneurism Treated by Temporary Metallic Compression of the Femoral Artery ..	*T. P. Teale, Jun., Esq.*	214
48 Novel Method of dealing with Ligatures applied to Arteries	*C. De Morgan, Esq.*	218
49 Traumatic Aneurism of the Palm Cured by Compression	*Sidney Jones, Esq.*	218
50 New Operation for Cure of Varicose Veins ..	*John Wood, Esq.*	220

ALIMENTARY CANAL.

51 Strangulated Congenital Inguinal Hernia	*Prescott Hewett, Esq.*	220

ORGANS OF URINE AND GENERATION.

52 The Proofs that Lithotrity is an eminently Successful Operation	*Henry Thompson, Esq.*	221
53 On the After-Treatment of Lithotrity	*Dr. George H. Porter*	226
54 On the Immediate Treatment of Stricture of the Urethra	*Barnard Holt, Esq.*	229
55 Over-Distension and Rupture of the Urethra ..	*Henry Thompson, Esq.*	235
56 Atony of the Bladder from Stricture of the Urethra	*T. B. Curling, Esq.*	236

AFFECTIONS OF THE EYE AND EAR.

ARTICLE.	AUTHOR.	PAGE.
57 On Extraction of Cataract	*Prof. Von Graefe*	238
58 On Extraction of Cataract by the Scoop	*J. Soelberg Wells, Esq.*	243
59 On the Different Operations for Senile Cataract ..	*Do.*	249
60 When one Eye is Blind is it prudent to attempt to Restore Sight while the other remains Perfect? ..	*Haynes Walton, Esq.*	255
61 Brown Citrine Ointment in the Treatment of Tarsal Ophthalmia and Phlyctenular Conjunctivitis ..	*Dr. E. Williams*	258
62 A Modification of the Strabismus Operation ..	*Dr. R. Liebreich*	259
63 On Sub-Conjunctival Injection of a Solution of Chloride of Sodium, to promote the Absorption of Corneal Opacities	*Prof. Rothmund*	262
64 A Case of Epithelial Cancer of the Orbit	*J. W. Hulke, Esq.*	263
65 On the Use of Artificial Support in Certain Forms of Deafness; with Cases	*Dr. Edward Bishop*	270
66 Case of Restoration of a Perforated and Collapsed Membrana Tympani	*J. Hinton, Esq.*	272

DISEASES OF THE SKIN,

67 On the Diagnosis of Skin Diseases	*Dr. Tilbury Fox*	275
68 On the Influence of Flannel and Scratching; and on Medicinal Rashes	*Do.*	278
69 On the Treatment of Various Skin Diseases ..	*Editor of Medical Times and Gazette*	281
70 On Phenic Acid in Skin Diseases	*William Harding, Esq.*	283
71 On Porrigo	*Dr. T. W. Belcher*	283
72 On the Etiology of Eczema	*Dr. Frank Smith*	285
73 On Removal of Nævus by Enucleation	*T. P. Teale, Jun., Esq.*	286
74 On Operation for Nævus	*Furneaux Jordan, Esq.*	287

SYPHILITIC AFFECTIONS.

75 On Syphilis	*Dr. Samuel Wilks*	287
76 On Syphilisation	*Henry Lee, Esq.*	302
77 Gonorrhœa in the Male—Treatment at the Hospitals of London	.. ..	303
78 On the Treatment of Gonorrhœa	*Spencer Watson, Esq.*	309

MIDWIFERY,

AND THE DISEASES OF WOMEN AND CHILDREN.

ARTICLE.	AUTHOR.	PAGE.
79 On the Comparative Value of the Long Forceps and Turning in Cases of Contracted Pelvic Brim ..	*Dr. Alexander Milne*	311
80 On an Improved Form of Handle for Midwifery Forceps	*Dr. Andrew Inglis*	318
81 On the Management of the Second Stage of Natural Labour	*Dr. James Hardie*	321
82 A Case of Hydatids of the Uterus Simulating Pregnancy and Natural Labour	*R. Ley, Esq.*	328
83 Concealed Accidental Hemorrhage at Full Term; Forceps; Post-Partum Hemorrhage Arrested by Ether Spray Externally; Recovery	*Dr. Braxton Hicks*	330
84 On Constriction of the Cervical Canal ..	*Dr. E. J. Tilt*	331
85 The Treatment of Endo-Metritis by Uterine Scarification	*Dr. E. D. Miller*	334
86 On Polypus of the Uterus; with Descriptions of a Modification of the Ecraseur for Removal of Intra-Uterine Growths	*Dr. Lombe Atthill*	337
87 Self-Retaining Speculum	*Dr. G. Syng Bryant*	342
88 Pruritus Pudendi Successfully Treated by Sulphite of Soda	*Dr. Samuel B. Frizell*	343
89 Hemorrhage from Fibrous Tumour of the Uterus; its Nature, Source, and Surgical Treatment ..	*Dr. J. M. Duncan*	344
90 Ovariotomy: Pedicle Secured by Silver Wire after the Failure of the Actual Cautery to Arrest Hemorrhage	*Dr. J. Marion Sims*	365
91 Seven Cases of Ovariotomy, in which the Pedicle was Ligatured in two portions and dropped back into the Abdomen, the ends of the Ligatures having been cut off	*Thomas Bryant, Esq.*	368

ADDENDA.

95 On the Remedial Uses of the Prunus Virginiana ..	*Dr. Clifford Allbutt*	372
96 On the Physiological and Therapeutical Action of Narceia	*Dr. A. Eulenberg*	375
97 On the Therapeutical Properties of Narcein ..	*Dr. Oettinger*	376
98 On the Antiseptic Properties of the Hyposulphites	*Dr. Constantin Paul*	377
99 Tincture of Podophyllin	*F. W. Dunne, Sen., Esq.*	378
100 Syrup of the Phosphates of Iron, Quinine, and Strychnia	*Dr. Lyons*	378
	Do.	379
101 Chlorate of Quinia		
102 On Paraffo-Stearine: a Substitute for Starch, Plaster of Paris, and such like substances, in Bandages and Splints	*James Startin, Esq.*	379

ADDENDA, Continued.

ARTICLE.		AUTHOR.	PAGE.
103	Liquor Carbonis Detergens, and Sapo Ejusdem ..	.. ..	382
104	Notice of some of the Therapeutic Effects of the Bromide of Potassium	*Dr. James Begbie*	382
105	On the Effects of Iodide of Potassium	*Dr. R. S. Sisson*	390
106	Two Cases of Poisoning by Over-Doses of the Fluid Extract of Gelseminum	*Rezin P. Davis, Esq.*	390
107	Fatty Degeneration of Muscle	*C. Macnamara, Esq.*	392
108	Hydrostatic Atomiser or Exsufflator	*Dr. G. J. Arnold*	396
109	On Polypus of the Nose, more particularly in reference to its Treatment	*Thomas Bryant, Esq.*	397
110	An Ingenious Bullet Detector	.. ..	400

INDEX.

SYNOPSIS,

CONTAINING A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THE FOLLOWING PAGES: SHOWING, AT A GLANCE, THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE LAST HALF-YEAR. (ARRANGED ALPHABETICALLY.)

AFFECTIONS OF THE SYSTEM GENERALLY.

CANCER.—To relieve the pain caused by injecting scirrhus with dilute acetic acid, add a third or fourth of a grain of acetate of morphia to the acid solution injected. The severe pain which is sometimes produced is quite done away with. (Dr. Fleming, Mr. P. Stewart, p. 11.)

Injections not applicable to Primary Cancer.—In our present state of knowledge of the treatment of cancer it does not seem right to essay a remedy so little tried, and the adequacy of which in cases of primary tumour is so uncertain. Both disappointment and damage have resulted, to the writer's personal knowledge, from an experimental use of acetic acid in cases of primary cancer of the breast, which were fitted for removal by the knife. The treatment is very applicable to the dispersion of secondary tumours (as of the glands in the axilla). Whilst primary tumours are large, and growing, the acid can only be thrown into them in small quantities, and at intervals. If used in a large quantity, it produces suppuration or sloughing, a disastrous action of a remedy in primary cancer. (Mr. C. W. Moore, p. 8.)

PYÆMIA.—No drug is to be depended on in the treatment of pyæmia; the proper use of food and stimulants is our anchor. The constant administration of suitable food in small quantities is more to be recommended than the free use of stimulants. The latter are such potent agents, and so valuable, that we should not be careless of their profuse expenditure. If we are lavish of them at first, they may the sooner fail us afterwards, when life more immediately hangs upon the effects they produce. Brandy is the most suitable stimulant. Pyæmia was a very frequent cause of death during the American war; and the use of sulphites and hyposulphites was not found to be of any advantage. Of all medicinal agents, the most valuable are probably the

alkalies, which promote the oxidation and destruction of unstable organic compounds. Liebig says, "A number of organic compounds acquire, by contact with, or in the presence of a free alkali, the power of combining with oxygen (of burning), which alone they do not at all possess at the ordinary temperature of the air, or at the temperature of the body. The depressing action of alkalies is not so great as is generally believed. The bicarbonate of potash is the salt most suitable to cases of pyæmia. (Mr. W. S. Savory, p. 18.)

Typhus and other Asthenic Fevers.—*Chlorate of Quina.*—In the graver forms of typhus, typhoid, scarlatina, small-pox, low phlegmonous inflammation, &c., chlorate of quina is stated to be a remedy of a highly satisfactory character. (Dr. Lyons, p. 379.)

Zymotic Diseases.—*Sulphites.*—The reason of the non-success of the salts of sulphurous acid in the treatment of fevers is two-fold. First, the treatment is not commenced in time. It should be given before the blood has become loaded with poison and deteriorated in quality. Secondly, the hyposulphites have been used instead of the sulphites. Hyposulphites become oxidized in passing through the system. Sulphite of magnesia is most suitable for internal administration, and sulphite of soda (from its great solubility) is most suitable for external use as a lotion. (M. de Ricci, p. 3.)

AFFECTIONS OF THE NERVOUS SYSTEM.

Acute Mania.—*Bromide of Potassium.*—In two cases of violent maniacal excitement, a dose of thirty grains of the bromide of potassium, administered every second hour, reduced the patients to quietness, and procured sleep, of which they had deprived for days. (Dr. J. Begbie, p. 384.)

Anæmia, Dyspepsia, and General Debility.—*Electricity.*—Faradisation (the use of the secondary current), when applied thoroughly, with the negative pole at the feet and the positive pole down the spine and over the stomach and bowels, for a number of chronic asthenic affections, is a far more effective remedy than any internal tonic. (Dr. G. M. Beard, p. 72.)

Delirium Tremens.—*Capsicum.*—Capsicum is a remedy of considerable value in cases of delirium tremens. It produces a sense of warmth and comfort in the stomach, when first taken, allaying the agitation, debility, and cardiac and epigastric anxiety, which are such constant and distressing features of the disease. It should be given in from twenty

to thirty grain doses, made up in bolus with honey of roses. (Dr. Lyons, p. 66.)

Indian Hemp.—In a case of delirium tremens, twenty minims of the tincture of Indian hemp was given every four hours. After the third dose the patient fell into a deep sleep, which lasted about four hours. The use of opium was inadmissible, as he had formerly been an opium eater. (Mr. H. J. Tyrrell, p. 65.)

Pain.—*Narceine.*—Narceine is a very valuable remedy in all those cases in which morphia is either not tolerated from the beginning, or in which it has lost its effect from long use. Its effects are well seen when it is used in hypodermic injection. No unfavourable symptoms are produced, such as headache or sickness. There is generally a diminution in the frequency of the pulse. (Dr. Eulenberg, p. 375.)

Narceine is about four times weaker than morphia. The latter is more suitable to relieve pain, but the former should be used where it is desired solely to procure sleep. Narceine is very useful as a sedative to allay cough. (Dr. Oettinger, p. 376.)

Sleeplessness.—*Bromides.*—A dose of from twenty to thirty grains of bromide of potassium, dissolved in a wineglassful of water, administered at bed-time, repeated in the morning, and persistently employed in this way for days or weeks, will often effect what the most powerful narcotics in daily use have failed to accomplish in the sleeplessness which occurs during convalescence from fever, and at the termination of acute diseases, or after the performance of surgical operations. In many such cases opium only produces sickness, vomiting, or headache. (Dr. Begbie, p. 382.)

Narceine.—Narceine is coming into great fashion amongst the French, to replace morphia. It may be given in doses of from a sixth to half a grain. It produces sleep "which is soft, tranquil, uninterrupted, and followed by a quiet awaking." It does not produce constipation. (Dr. Eulenberg, p. 376.)

Tetanus.—*Calabar Bean.*—The use of Calabar bean in the treatment of tetanus is likely to prove of service. The action of the bean in sufficient doses is to paralyse the voluntary muscles, the very muscles which are spasmodically contracted in tetanus. A good preparation for internal use may be made by dissolving extract of Calabar bean, twelve grains, in white wine, one ounce. Every five drops of this contains one-eighth of a grain of the extract. Such a dose may be given every half-hour, the effects being carefully watched.

In the first case of two related, a semi-comatose condition was induced after a time. The administration of the doses near together is found necessary, as their effects are very short-lived. Subsequently in the case, by a mistake of the apothecary, much larger doses were given than was intended, with the effect of producing complete relaxation of all the muscles, with alarming symptoms both in the heart's action and in the respiration. It seems better to increase the frequency rather than the strength of the doses. (Dr. E. Watson, p. 54.)

Tobacco Infusion.—A case of severe tetanus is recorded, in which marked amelioration of the symptoms followed the direct application of an infusion of tobacco to the wound. The injury was an extensive lacerated wound of the calf. The infusion contained half an ounce of tobacco to the pint of water. The report of the case is as follows:—"Within two or three hours after the application of the tobacco, the improvement was most marked. All the rigid muscles became, to a considerable extent, relaxed; the mouth could be opened about half an inch, the paroxysms were less severe and frequent, and a good deal of sleep was obtained. (Mr. J. B. Junor, p. 62.)

Idiopathic Tetanus.—A case of idiopathic tetanus, treated by nicotine, is related by Mr. Crawford, Clinical Clerk to Dr. Lyons, of Dublin. Tobacco enemata were given, also the following pills:—℞. Nicotinæ, gtt. duas; ext. gent., q. s.; ut fiant pil. viij. St. j. tertius horis. The treatment is reported to have had a perceptible effect on the spasms. (Dr. Lyons, p. 60.)

AFFECTIONS OF THE CIRCULATORY SYSTEM.

ACUPRESSURE.—*Advantages over Ligatures.*—The walls of the vessel are held together in apposition by a material which does not tear or irritate their coats, and which can be withdrawn in a day or two, leaving no extraneous body in the wound to prevent its speedy and complete healing. On the other hand, a ligature causes mortification of the artery at the tied point, and usually also below it, and we have as many dead and foreign bodies as we have tied vessels, and as many setons saturated with decomposing fluids as we have ligatures. (Sir J. Y. Simpson, p. 205.)

To arrest Hemorrhage from Scalp Wounds by Acupressure.—In ordinary cases, after clipping the hair short with scissors, and then shaving the part, the best plan doubtless is the usual one, viz., to bring the parts well together with adhesive

plaster. But when the patient is intoxicated, or has to be removed some distance home, secondary hemorrhage is very liable to occur from removal of the strapping. In such cases pass a needle through the skin from without inwards, a quarter of an inch from one end of the wound, and to one side of it. The needle is then pushed along the under or raw surface of the lip of the wound, till the upper angle is reached, when it is made to reappear. Another needle must now be passed along the other lip of the wound. Ligatures must now be passed around the projecting extremities of these needles, so as to compress each lip of the wound separately, and then the edges of the wound can be brought together by a few turns of thread passed from one needle to the other. In twelve hours or so the needles should be withdrawn, and the ligatures left. The ligatures being soaked in blood form a hard scab, under which the wound heals. It is sometimes difficult to remove the needle in twelve hours, if so, it may be left twenty-four or thirty-six hours, when it will be found quite loose. (Dr. J. Dunlop, p. 210.)

Aneurism.—*Temporary Wire Compresses.*—Mr. John Dix, of Hull, in Dec., 1865, successfully treated a case of carotid aneurism by temporary compression of the arteries by a wire compress. The circulation was entirely arrested for six days, and the compress then withdrawn. Acting on this hint, Mr. Pridgin Teale, of Leeds, has lately treated a case of popliteal aneurism by the same plan. The femoral was exposed, and a piece of silver wire passed around it at the apex of Scarpa's triangle; by means of a needle the ends of the wire were then passed through the sartorius, and obliquely outwards through the skin, at a distance of an inch and a half from the wound. The wound was then closed, and the two ends of the wire—being about one-third of an inch apart—were tied over a small piece of cork, and tightened so as to compress the artery and stop the pulsation in the aneurism. The rest of the history of this case is unfortunate, as diffuse erysipelas, originating in a slight blush at the point where the counterpressure was made by the small piece of cork, had carried off the patient. Before this, however, set in, the pressure had been distributed over a larger surface by means of a piece of splint five inches by one. It was found, after death, that the artery had been cut through, but that the divided ends were perfectly closed; this was accounted for by the long period of time during which the wire had been left, viz., fifteen days. Mr. T. suggests that the circulation should be completely arrested, which was not done in this case. It is also evidently advisable to distribute the counterpressure over

as large a surface of skin as possible, and not to employ only a small substance, which is liable to cause injurious pressure on one point. (Mr. T. Pridgin Teale, p. 214.)

Aneurism of the Palmar Arch.—This always results from injury. A case successfully treated by compression is related. By means of a tourniquet light pressure was kept on the brachial, a bandage was applied from the hand upwards, and cork pads were placed upon the radial and ulnar above the wrist. At the same time the forearm was flexed. At first, on account of the tension and redness of the skin over the aneurism, it was thought unadvisable to use any pressure in the palm; but subsequently, when the redness had subsided, and the sac had become somewhat consolidated, a cork pad was placed also over the site of the aneurism. The aneurism was completely cured by this plan of treatment. (Mr. S. Jones, p. 218.)

Hemorrhage from Wounds.—*A new Styptic Fluid*, "Styptic Colloid."—Dr. Richardson of London has introduced a compound fluid, which is at the same time a styptic, an antiseptic, and a complete means of excluding wounded, abraded, or ulcerated parts of the body from the influence of the external air. The object to be aimed at in the manufacture of this fluid is to saturate ether entirely with tannin and a colloidal substance xyloidine, or gun cotton. In the first step of the process, the tannin, rendered as pure as it can be, is treated with absolute alcohol, and is made to digest in the alcohol for several days. Then the ether, also absolute, is added until the whole of the thick alcoholic mixture is rendered quite fluid. Next the colloidal substance is put in until it ceases readily to dissolve. For the sake of its very agreeable odour, a little tincture of benzoin is finally admixed. The solution is now ready for use. It can be applied directly with a brush, or, mixed with equal quantities of ether, it can be applied in the form of spray. When applied to a surface the ether and alcohol rapidly evaporate, and the tannin and gun cotton are left stranded on the surface, forming with the blood, or the secretion of the surface, a kind of membrane almost like leather. This liquid must be applied to wounds in this way:—Having brought together the edges by sutures, apply the solution freely over the wound and between the edges, next cover the wound with a thin layer of cotton-wool saturated in the liquid, and finally, the whole may be coated over with another layer of the solution. When the ether has nearly evaporated a little dry cotton may be placed over the part, or if pressure is wanted a bandage may be applied. If a cavity has to be treated, the fluid is more neatly and handily

used as spray. In cases of compound fracture, after the parts have been brought into apposition as far as possible, and fixed in the necessary position, the fluid should be poured slowly into the open cavity, so as to fill it. Then the parts externally should be covered with a layer of cotton-wool saturated with the solution. Carbolic acid, iodine, or morphia may be combined with the "styptic colloid." (Dr. B. W. Richardson, p. 192.)

Ligatures to Arteries.—*New Plan.*— When the vessels have been tied, by means of a needle pass the ligatures through the skin close to where they are tied. They remain quite quiet and come away without the slightest pain or trouble when their work is done. The wound consequently has nothing to irritate it, and enjoys every opportunity of healing by the first intention. The plan leaves the parts as quiet as if acupressure had been applied. (Mr. Campbell De Morgan, p. 218.)

Varicose Veins of the Leg.—In Mr. Lee's operation for varicose veins of the leg the vessel is divided between two ligatures. Mr. Wood, of King's College Hospital, operates by including the dilated vein between a needle in front and a double metallic wire behind. The needle and wire are introduced through the same openings, the latter first, and it is twisted as tightly as possible round the two projecting ends of the needle. No sores or other troublesome consequences ever ensue. (Mr. J. Wood, p. 220.)

AFFECTIONS OF THE RESPIRATORY SYSTEM.

Asthma, Spasmodic.—*Bromide of Potassium*—In two cases of asthma of long standing, where the patients had renounced all hope of benefit from drugs, the use of the bromide of potassium in full doses, night and morning, was followed by a remarkable remission of the fit, the patient in one case having slept for several consecutive nights without the return of the asthmatic paroxysm, a circumstance which had not occurred for years. In the second case the result was equally satisfactory. (Dr. J. Begbie, p. 385.)

Chronic Bronchitis and Heart Disease.—*Prunus Virginiana.* —The wild cherry has an action upon the heart very similar to that of digitalis. Where there is painful disturbance of action combined with feebleness it is invaluable. In cases of mitral disease it is very useful. In cases of chronic bronchitis with feeble circulation it often relieves the symptoms so much as to enable old-standing cases to resume some kind of work.

The tincture is the most suitable preparation, it should be given in doses of ℥xx. ℥xxx. five or six times a day. (Dr. Clifford Allbutt, p. 372.)

Croup.—*Advanced Stages of.*—The indications in treatment are first, to relieve the spasm of the glottis by chloroform and the vapour of hot water inhaled; secondly, to reduce the œdema of the mucous folds above it, which may be sometimes successfully done by the application of a strong solution of the nitrate of silver by means of the laryngeal sponge-probang. If this does not answer the œdematous parts should be pricked or incised with the laryngeal lancet. This may be thoroughly recommended in suitable cases. The third indication is the use of measures for the expulsion of the false membrane through the natural openings. This is best accomplished by emetics, of which the most suitable is ipecacuan and sulphate of zinc, antimony produces too much depression. When tracheotomy is successful it is generally in a case of œdema glottidis without any exudation. (Dr. Eben. Watson, p. 115.)

Gouty Bronchitis.—In a considerable number of cases of chronic bronchitis there is a history of gout. This is to be borne in mind in the treatment. When there is gouty bronchitis, the more characteristic forms of the disease are not usually present. (Dr. H. Greenhow, p. 93.)

Hooping Cough.—*Hydrophenyl.*—Hydrophenyl or benzine, a substance contained in the purifying chambers of gas works, if placed in small quantities in the room or bed of a child suffering from hooping cough produces exactly the same smell as is observed in gas works, and has the effect of relieving the distressing symptoms sometimes rapidly. Dr. Lochner tried the plan on his own child, and he states that the precursory symptoms lasted a week, and the disease itself only six days. (Dr. Lochner, p. 124.)

Pneumonia.—Crepitation is the auscultatory sign which characterises the stage of engorgement, and practically is the first sign on which we can depend as indicating the existence of pneumonia. A stage of dryness with intense arterial injection *precedes* this state of engorgement and is indicated by a harsh, loud, puerile respiratory murmur. This is merely an exaggeration of the healthy sound, and is the result of the dry and swollen condition of the pulmonary membrane; this gives rise to a constriction of the mouths of the air-sacs. (The air-sacs communicate with the bronchial tubes by a circular opening which is smaller than the cavity to which it leads). (Dr. A. T. H. Waters, p. 105.)

Polypus of the Nose.—*Tannin.*—The treatment of nasal polypus by removal either by forceps or ligature is very unsatisfactory, the growth returning again rapidly and requiring again removing. Mr. Bryant, of Guy's Hospital, finds that tannin used as snuff, whilst it has no effect on the healthy membrane causes the complete withering up and disappearance of the polypus. It should be blown daily up the nostrils with a quill. The removal of the polypus before the tannin is commenced is not even necessary. The best, however, is that the polypus does not return, and the case is permanently cured. (Mr. T. Bryant, p. 397.)

AFFECTIONS OF THE DIGESTIVE SYSTEM.

Cholera.—*Bromide of Potassium.*—Dr. Niven, of Leith, states that in the four cases of cholera in which he has employed bromide of potassium, the most remarkable success has followed. He used it in doses of half-a-drachm every hour, and found that it excited so powerful an effect upon the nervous system as very shortly to put a stop to the cramps. (Dr. Niven, Dr. Begbie, p. 388.)

Diphtheria.—*Permanganate of Potash.*—A gargle of permanganate of potash (gr. x. to the ℥xx.) is very useful in cases of diphtheria. It must be used very frequently, and iron and port wine taken internally at the same time. Having had the disease personally, the author treated himself upon this plan and found much relief from it. (Dr. W. W. Campbell, p. 128.)

Diphtheria and Ulcerated Tonsils.—Carbolic acid is an excellent application to the throat in cases of diphtheria and ulcerated tonsils. It may be given in form of a gargle, but in children the throat may be freely swabbed out with it on a piece of sponge. The following is the best formula. ℞. Acidi carbolici ℥xx., acidi acetici ʒss., mellis ℥ij., tinct. myrrhæ ℥ij., aquæ q. s., ut fiat gargarisma ℨvj. The carbolic and acetic acids to be well shaken together, the honey to be added with the water gradually. Quinine and tincture of iron should be given internally. (Mr. C. Sedgwick, Jun., p. 131.)

Strangulated Congenital Inguinal Hernia.—This form of hernia is only in adults called congenital, owing to its occurring in the vaginal process of the peritoneum. It is usually sudden in its occurrence. There is no gradual process of development such as is observed in the ordinary inguino-scrotal rupture. It projects in a remarkable manner from the

external outlet of the inguinal canal, being of a more globular form than the ordinary form of hernia which is pyriform. In these cases the stricture is generally extremely tight and the taxis less frequently successful. Operative interference must not be long delayed or severe mischief will be occasioned to the gut. (Mr. Prescott Hewett, Mr. Birkett, p. 220.)

Severe Colic and Constipation.—*Belladonna.*—An interesting case of colic with constipation is related. Opium not having relieved the pain, nor copious injections of gruel and castor oil produced any evacuations, leeches were applied. The abdomen however became very tender on pressure, and the pulse rose to 108. The patient was now ordered a pill containing half a grain of extract of belladonna every four hours, with belladonna ointment to the abdomen, a warm bath at night, and a castor-oil enema twice a day. On the following morning after taking four of the pills, and the pupils being moderately dilated, the patient had a copious feculent motion. The pills were repeated twice daily, and the bowels continued to act regularly and copiously. (Dr. Murchison, p. 132.)

AFFECTIONS OF THE URINARY ORGANS.

Atony of the Bladder from Stricture of the Urethra.—In cases of stricture, even after the stricture is cured, the patient is sometimes found to have lost the power of emptying the bladder. This is not owing to paralysis, but to atony of the muscular fibre from over-distension. The treatment required is regular relief of the bladder by catheterism, along with good food, and the exhibition of tincture of iron, or citrate of iron, and strychnia. (Mr. T. B. Curling, p. 236.)

Diabetes.—*Treatment by Perspiration.*—A case is related by Sir Henry Marsh, of Dublin, which exhibits in a striking point of view the powerful effects of copious perspiration, produced by the vapour bath and muscular exertion, in controlling and restraining the symptoms of diabetes. Before the treatment was commenced, the patient is described as being in a state of "alarming debility." On the 27th of April he was placed in the vapour bath, half an ounce of the tincture of opium being mixed with the water which was to be converted into steam. He remained in the vapour bath twenty minutes. This was repeated every four or five days with great benefit. It generally excited copious perspiration, followed by sound and refreshing sleep. Before this plan of treatment was commenced, the necessity of assuaging his thirst and voiding his

urine was so continual during the night that he could scarcely obtain any sleep. After it had been continued until the 3rd of June, the urine was diminished to eight pounds daily, the skin perspired freely, there was a great accession of strength and diminution of thirst and appetite. The patient was now put upon laborious exercise, while the body was enveloped in thick flannel, and the weather unusually warm. The first efforts were difficult and reluctant, but before the close of each day, when perspiration was fully established, the labour was easy and the fatigue trifling. His ordinary diet consisted of eggs, beef, mutton, soup, and milk; and his drink lime water with milk and beef tea. Improvement was once retarded by a severe febrile attack, but was upon the whole continuous after the commencement of this plan of treatment. (Sir H. Marsh, p. 137.)

Diseased Kidneys.—*Effect on the Success of Operations.*—It is a remarkable fact that damaged kidneys have as a rule much more influence upon the result of an operation or injury than a damaged heart, although the action of the kidneys is not so immediately necessary to life as that of the heart. This is probably because the kidneys are called upon to accomplish extra work in excretion and purification of the blood at a time when they are unequal to even the ordinary duties of their office. (Mr. W. S. Savory, p. 42.)

Lithotrity.—Mr. Henry Thompson in no case declines to employ lithotrity, unless in cases of old and narrow stricture, or of exceedingly large and hard stone, rendering crushing impossible. Mr. T. claims to have established the following propositions respecting lithotrity:—1. That lithotrity is capable of freeing elderly patients from stone at a very small risk, if well-constructed instruments, with delicate manipulation, be employed, and if watchful care be exercised in the management of the patient. 2. That the success of lithotomy has never been in any way comparable with that of lithotrity. In the mode of operating by Mr. Thompson, the following notes are worth remembering: Preliminary injections are never used. Mr. Clover's apparatus for removing fragments is occasionally useful; by far the greatest number, however, do not require it. Chloroform is rarely required. Large fragments should not be removed as such, but should be pulverised and allowed to be expelled by the natural powers. No benefit can accrue from the removal of fragments whole, as compared with their removal in powder. It is certainly a safe and useful plan to instruct the patient to pass no water during the first twenty-four hours after a sitting,

except in a recumbent position on his back. The fragments soon become water-worn, and therefore less sharp. (Mr. H. Thompson, p. 225.)

After-Treatment of Lithotrity.—There can be no more important element in the after-management of a case of lithotrity, or a point more conducive to the success of the operation, than early removal of the detritus, and without injury to the prostate or urethra. The plan of injecting the bladder is very unsatisfactory, on account of the feeble force of the return current. An instrument devised by Mr. Clover, of London, withdraws the injected liquid by *suction*. This instrument is an important auxiliary in the after-treatment of lithotrity. It consists of "a glass cylinder, two inches long and two inches wide, having an eight-ounce India-rubber ball at one end, and a vulcanite mount at the other, in which is a hole which fits closely to a collar fixed just above the rings of the catheter, so as to allow the catheter to project three-quarters of an inch inside the glass vessel." The instrument may be procured from Weiss, of London. (Mr. Clover, Dr. G. H. Porter, p. 226.)

Sediment Tube for Urine.—Some time and care is generally required to obtain the lowest portions of a urinary sediment for microscopic examination. To obviate this, Dr. Basham recommends a portion of the urine to be placed in a tube terminating inferiorly in a small and neat tap. This tube is mounted on a stand (see woodcut), and may be obtained for a small cost from Messrs. Griffin and Sons, of Garrick-street, Long-acre. When the sediment is deposited, the lowest portion may be let off on to a piece of glass by turning the tap slightly. (Dr. W. R. Basham, p. 146.)

Stricture of the Urethra.—*Immediate Treatment.*—Mr. Holt asserts that in all cases of stricture of the urethra, where the stricture has been fairly split, the best known results are obtained. He considers that it must ultimately supersede all other modes of treatment. The stricture rarely returns, even when the after-treatment has been neglected; and after the lapse of years it will be found that the same instrument can be passed which was admissible at the time of the operation. One precaution is necessary. A small gum catheter must be passed and retained in the bladder for a few hours, and the dilator introduced immediately on its withdrawal; and if this is kept in the urethra, there need not be the slightest hesitation in at once *rapidly* thrusting the chosen tube between the blades of the instrument. If the dilator is not fairly in the bladder, the result must be a failure. (Mr. B. Holt, p. 229.)

AMPUTATIONS, FRACTURES, DISLOCATIONS, &c.

Amputation at the Shoulder-Joint.—*New Method.*—It is a most excellent plan, in excision of the head of the humerus, to expose the bone by a single linear incision, beginning immediately external to the coracoid process. It is striking with what ease disarticulation may be thus accomplished, and moreover, from the deltoid being divided so far forwards, there is no trouble with bleeding from the trunk of the posterior circumflex artery. If, however, it is found, on exposing the head of the bone, that amputation at the shoulder-joint is necessary, the incision may be carried back from the lower end towards the posterior fold of the axilla, and the result will be found to be even better by this than by the ordinary method. The first incision must be carried downwards through the clavicular fibres of the deltoid, as far as the lower edge of the humeral attachment of the pectoralis major. If the deltoid is unusually large, it is well to dissect back the skin and fat a little, and to divide the muscle rather higher up, so as to avoid redundancy of muscular fibre. The nerves must be gently pulled out and cut off as short as possible, so that they may not become implicated in the cicatrix. It is also a good plan to expose the artery, tie it in two places, and cut it between the ligatures. (Mr. J. Spence, p. 172.)

Compound Fracture.—*Carbolic Acid.*—The reason that a compound fracture usually proves so much more dangerous to life, and serious in its results to the limb, is not the simple access of oxygen, but of the septic particles which always exist in the atmosphere. These act like yeast, producing decomposition in everything susceptible of it. The truth of this has been proved by the philosophic researches of M. Pasteur. In a compound fracture, twenty-four hours after the accident the coloured serum which oozes from the wound is already distinctly tainted with decomposition. This state of things is enough to account for all the bad consequences of the injury. By the application of carbolic acid to the wound this decomposition of the blood and other effused fluids may be prevented. Carbolic acid forms with the blood a solid crust, which prevents the access of these septic particles contained in the atmosphere, and retains for a long time its antiseptic properties. Having put up the limb comfortably, lay on the wound a piece of lint soaked in carbolic acid, and allow it to remain undisturbed. If looked at at the end of several days, no signs of suppuration will be found. If any blush of redness occurs round the sore the lint may be removed, and the wound dressed with water having a small proportion

of carbolic acid diffused in it. As carbolic acid is almost absolutely insoluble in water but dissolves readily in the fixed oils or glycerine, these may in some cases prove very suitable applications. In some cases it is well not to remove the lint at all, but to cover it with a piece of very fine and thin block tin, to prevent the evaporation of the volatile organic acid. A firm crust is formed by the blood, lint, and carbolic acid, beneath which no suppuration occurs. (Mr. Joseph Lister, p. 149.)

Diseases of Joints, Fractures, &c.—*Paraffo-Stearine as a Substitute for Plaster of Paris or Starch.*—Bandages or felt immersed in melted paraffo-stearine and applied to the part whilst hot form an inexpensive, useful, cleanly, elegant and efficient application in all maladies or injuries where rest, equable support, and solidity of the parts affected are required. Paraffo-stearine is a combination of equal parts of rock paraffine and stearine, as used for candles. This may be coloured with alkanet root to a flesh tint. (It may be obtained so coloured in convenient canisters from Mr. Ewen, of Jermyn-street, London.) When used it must be heated to about 160° Fahr., and the bandage or felt saturated with it. After application the surface may be smoothed with the palm of the hand until it assumes the surface of ivory. The best way of procuring the material when a small quantity is wanted, is to purchase stearine candles. The melting point of those used for India is 157° Fahr. (Mr. J. Startin, p. 379.)

Excision of the Knee-Joint. — *After-treatment of.* — Dr. Watson, of Edinburgh, recommends the following apparatus in the after-treatment of cases of excision of the knee-joint. It consists essentially of two parts—1. A suspension-rod made of iron, about the size of No. V. of trade wire gauge; 2. A modelled Gooch splint, long enough to extend from the tuberosity of the ischium to beyond the heel. The suspension-rod extends from the groin to the extremities of the toes, and is bent to the outline of the limb, departing from it only in the situation of the excision, where it forms a bow or arch. To the upper surface of the rod are attached one or more hooks by which suspension is effected. The Gooch splint should not be made too wide, and should not surround the thigh and leg to more than two-thirds of their circumference. It should be scooped away laterally, at a part corresponding to the site of the excision, and should have an aperture cut corresponding to the tendo Achillis and heel. In this apparatus the limb must be encased by means of an open-wove roller bandage applied from the toes upwards. The whole must be rendered immovable by means of either plaster-of-Paris or paraffine

rendered temporarily liquid by heat, and applied by means of a painter's brush. The splint must be well padded before application, and the padding near the site of operation covered either with paraffine or gutta-percha tissue. The limb may then be swung by the ankle hook of the suspension-rod from a Salter's swinging cradle. (Dr. P. H. Watson, p. 175.)

Joint Affections.—*Forcible movements.*—There are some obscure affections of the knee-joint which are curable by forced movements. In the most common cases the "lock" usually takes place with the joint moderately bent, and the leg rotated outwards. It must be unlocked by extremely bending the joint, then rotating the leg inwards, and then suddenly and forcibly extending it. The rule seems to be to first move the joint as far as possible in that direction which is most easy, then forcibly to move it in the direction in which the lock occurs. There are some cases of stiff joint from involuntary muscular contraction, these are most common amongst the young, and remain after some injury, the direct effects of which have been cured. These cases are curable by forcible movements of the joint. Any joint is liable to this, including the cervical vertebræ. If there is any doubt about the diagnosis, chloroform will decide it. (Mr. J. Paget, p. 186.)

Slipping of a Tendon.—The tendons of the peroneus longus may slip at the point of the outer malleolus; and an extensor tendon of a finger may slip over the heads of a metacarpal bone and first phalanx. These may be made out by feeling the displaced tendon and the gap where it should be, and may be reduced by relaxing the slipped tendon as much as possible, and replacing it with lateral pressure and sudden stretching. The long tendon of the biceps may slip from its groove, when there is noticed a slight forward prominence of the head of the humerus, its drawing up under the acromion, and the pain at the lower end of the biceps on stretching it. It is questionable however whether this displacement can ever be so fairly made out as to be reduced. (Mr. J. Paget, p. 186.)

Sprains.—*Friction.*—When a sprained joint does not progress satisfactorily, but, although all signs of inflammation have disappeared, remains weak, cold, and painful on movement, the proper treatment is friction with movements forcible to a certain degree. Let the surgeon begin by handling, rubbing, and pressing the sprained part and its neighbouring structures very gently. After doing this for fifteen or twenty minutes, the rubbing and pressing may be increased in hardness, and the joint may be more freely moved, especially in the direction opposite to that in which it was forced by the accident.

Another quarter of an hour or more thus spent, is to be followed by rougher proceedings of the same kind, till even severe pressure and wide and violent movements can be borne without pain; and then, in hour or so the cure is deemed complete, or so nearly complete as to require only a slighter treatment of the same kind on the next day. (Mr. J. Paget, p. 189.)

Union by the First Intention.—Living tissues contain not only vessels, nerves, muscles, and blood, but interstitial fluid from which solid tissues are formed. This interstitial fluid which leaves the tissues when exposed to the influence of water and oxygen rapidly decomposes, and hence we have the cause of non-union of wounds by the first intention. To secure union by the first intention in ordinary wounds, it is necessary to thoroughly dry the surface so that no water may be left to excite decomposition, and to bring every part into close contact so that no moist air may be left behind. Lastly, when the lips of the wound are closed, we should seal up the wound with a fluid which perfectly anneals structure, such a fluid is the "styptic colloid." Even the peritoneum might be opened under special conditions. These are fully detailed at p. 204. (Dr. B. W. Richardson, p. 200.)

AFFECTIONS OF THE SKIN, ETC.

Eczema.—In nine out of ten cases of eczema indican may be detected in the urine of eczematous patients by spectrum analysis. Indican is supposed to be due to a retardation of the process of declension from the complex to the more simple of the products of function and secretion. It has a highly complex formula, and may be broken up with ease into leucine, indigo, and glucine. This retardation is probably due to accumulation of urea and other products of waste in the blood, owing to deficient renal secretion. (Dr. F. Smith, p. 285.)

Chronic Eczema and Pruritus Vulvæ.—The liquor carbonis detergens is an alcoholic solution of coal-tar, containing carbolic, phenic, and other acids, with dark tarry matter, and differing from carbolic acid as liquor cinchonæ does from quinine. Mixed with water, with which it forms an emulsion, it is an excellent local remedy in cases of chronic eczema and pruritus vulvæ; it is also useful as an injection for fœtid uterine discharges, and for gonorrhœa in the female, and as an application to foul ulcers, sloughing sores, and parasitic diseases. (Ed. Med. Times and Gazette, p. 382.)

Nævus.—When the skin is not greatly or at all implicated, make an incision through it, dividing it into two halves. Each half may then be snipped out piecemeal with a pair of curved scissors. The cure is effectual and rapid, and a hardly visible cicatrix is left. (Mr. F. Jordan, p. 287.)

Enucleation of Nævus.—There exists in most cases of large nævus a distinct capsule, which will enable the surgeon to enucleate the tumour without cutting wide of the disease, and thereby endangering large blood-vessels. Acting on this principle, Mr. Pridgin Teale, of Leeds, removed a rapidly growing nævus, measuring three inches by four, situated over the right parotid gland. The tumour was chiefly subcutaneous, but involved the skin near the lobe of the ear, to the size of half a crown. The nævoid skin was preserved, along with the sound skin, as a cover to the wound. The knife was kept close to the capsule, and was used very sparingly in separating the deep parts of the tumour, which extended to such a depth that half an inch of the internal jugular vein was laid bare, and the finger could be placed upon the styloid process. Recovery was rapid. (Mr. T. Pridgin Teale, p. 286.)

Prurigo Senilis.—Four-fifths of the cases of prurigo senilis depend on the pediculus corporis, and should be called phthiriasis. It nearly always attacks the shoulders and neck first, and subsequently spreads to the trunk and lower extremities. It is not exclusively confined to old people. Many very obstinate cases of prurigo of months' duration have been cured in a week by the use of an ointment consisting of half an ounce of olive oil, half an ounce of lard, and two drachms of the powder of stavesacre; at the same time more frequent change of linen, and care of washing of it in boiling water. (Mr. B. Squire, p. 281.)

Ringworm *(Tinea Tonsurans).*—Paint over the surface affected, with a firm brush, a preparation composed of two drachms of iodine dissolved in an ounce of colourless oil of tar. It forms a cake, which separates at the end of a week or fortnight. It may require to be repeated once or twice, but not often more frequently. It causes no pain, and is not liable to cause abscesses or destruction of the hair follicles, such as often result from deep blistering. The oil of tar is obtained by distillation from the common tar, and has a specific gravity of ·853. (Dr. Coster, p. 282.)

Skin Diseases.—*Caution as to the use of Flannel.*—When there is a congestive state of skin, or any disposition to neurosis, do not let the patient wear flannel, but place it, if necessary, outside the linen; this will prevent any "catching cold." The

diseases in which this is advisable are, chiefly, erythemata, roseola, urticaria, certainly syphilodermata in their early stages, scabies, and prurigo. A remembrance of this little practical point will sometimes give us the greatest cause to be thankful that we attended to it, trifling though it be. (Dr. Tilbury Fox, p. 278.)

Phenic Acid.—The value of the liquor carbonis detergens probably depends upon the phenic acid contained in it. It is well, however, to use the phenic acid in the form of lotion after the parts have been fomented with hot water and dried. It is very useful in prurigo senilis, pudendi muliebrum, eczema in its chronic form, and scabies. (Phenic acid may be obtained from Mr. Cooper, of Oxford-street.) (Mr. W. Harding, p. 283.)

VENEREAL AFFECTIONS.

Gonorrhœa.—This should be treated as a simple non-specific disease. In case of a first attack, in which inflammation runs high, a purge, hot bathing, and an alkaline medicine, either diuretic or aperient as may be indicated, followed by an injection of sulphate of zinc, two grains to the ounce. (Mr. Barwell, p. 307.)

The disease being entirely local may be cut short in its earlier stages effectually and safely by a strong lead lotion (liq. plumbi diac., ℥j., aquæ, ℥vij.) In the ordinary acute form of the disease, injections of warm water and weak lead lotion, together with bicarbonate of potash and henbane internally are found to relieve the symptoms. This treatment should be followed up by a sulphate of zinc injection when the acute symptoms have subsided. *Chordee* is effectually relieved by the application of extract of belladonna and glycerine along the under surface of the organ, combined occasionally with a sedative pill (opium or henbane) at night. *Orchitis* in the acute stage yields readily to antimony in combination with sulphate of magnesia. (Mr. C. Heath, p. 308.)

"*Disinfectant Treatment.*"—Let the patient inject every two hours a solution of carbolic acid and bicarbonate of potash, made in the proportion of half a fluid drachm of the former to a drachm of the latter, in a pint of water. The diet and other accessories as usual. (Mr. W. S. Watson, p. 309.)

Syphilis.—*Mode of Introduction into the System.*—The question has been long debated, and was one proposed for solution by the Venereal Committee lately, whether an abrasion or breach of surface is necessary for the absorption of the syphilitic

virus. This may pretty safely be decided in the negative, although it will, of course, more readily enter if there is a raw or abraded surface. Dr. Frazer, who has had a very large experience in India, has seen sores heal at once ; or perhaps, there was a mere scratch, which healed immediately, but was followed by the usual secondaries. For this reason the induration of glands in the groin, as a diagnostic mark, is more to be relied upon than is the character of the chancre. The usual period of incubation of the syphilitic poison is a month, but cases sometimes occur in which it is nearly twice that period. There can be no doubt but that syphilis can be conveyed from one person to another by means of the secretions, and even the blood. Two cases are related by Dr. Wilks, illustrating the inoculability by the latter fluid. In one the experiment was directly made by an Italian physician upon himself, in the other, a surgeon cut his finger whilst operating on a syphilitic patient, and in consequence took the disease. Women may inoculate men with the disease (indurated chancre) by means of the vaginal secretion alone, the mucous membrane being intact. (Dr. S. Wilks, p. 288.)

Mercury—At one time mercury was looked upon in the light of an antidote to syphilis, but it is now evident that it has no direct effect upon the disease, but only upon its effects. Its influence appears to be exerted merely on the general secreting apparatus of the body, and so, by promoting absorption, assists in getting rid of many of the morbid results of syphilis. Similar effects of the drug are seen in the removal of a bronchocele, enlargement of a lymphatic gland, or a pleuritic effusion. Iodine and potash have also analogous effects. It is evident then, that however much good may be effected at first by the administration of mercury, the symptoms will recur again and again. A practical lesson follows from this: instead of considering that mercury is a remedy for the earlier stages, and that at a later period tonics are required, this drug may be found useful even when the cachectic condition of the patient would have rather contraindicated it. The good effects of more active treatment will often be seen in patients whose condition had suggested merely wine, quinine, cod-liver oil, and such like remedies, but where a true syphilitic action was still in operation. (Dr. S. Wilks, p. 298.)

Duality of the Syphilitic Poison.—A patient may become proof against any further inoculation from a suppurating sore, whilst the secretion from a suppurating sore will produce upon the same patient a specific pustule. The converse of this is also true. Again, a patient may have a series of soft suppurating sores without any constitutional effects being

produced. He may thus have an indurated sore followed by the ordinary train of secondary symptoms. The suppurating sores do not prevent or modify the indurated sore, and the indurated sore, on the other hand, does not prevent the repeated inoculation of the secretion of the suppurating sores. (Mr. H. Lee, p. 302.)

AFFECTIONS OF THE EYE AND EAR.

Cataract.—Von Graefe, of Berlin, has introduced a modification of the ordinary linear extraction of cataract. He performs iridectomy after the corneal section is complete, making the point where the iris is removed to coincide with one angle of the wound. He insists upon the complete removal of the strip of iris from its attachment. The capsule is then to be lacerated and the lens extracted, if possible, without the introduction of any form of traction instrument, simply by the gliding pressure of the back of the spoon upon the sclera above the wound. When the lens does not readily yield to pressure, the use of the traction-hook is recommended, and will be required in about one operation out of eight. In making the corneal section he recommends the formation of a conjunctival flap, covering the whole length of the wound; this promotes rapidity of healing and firmness of cicatrix. (Prof. Graefe, p. 238.)

Scoop Extraction.—The mode of operating in scoop extraction of cataract will be found minutely detailed at p. 244 by Mr. Soelberg Wells.

Senile Cataract.—The various operations for the cure of senile cataract are three, viz., the flap operation; the scoop operation; and Graefe's operation. The flap operation undoubtedly presents the best results when it is successful. The risk is in the size of the incision so impairing the vitality of the cornea as to induce partial or even diffuse suppuration, and in prolapse of the iris. For a new beginner, the easiest and safest operation is the downward flap operation, for when the section has been successfully completed, the chief danger and difficulty are past. In the scoop extraction (see *Retrospect*, vol. lii.) these two principal dangers are nearly completely eliminated, but it is without doubt a more difficult operation than the common flap extraction, and for its successful performance demands a cool, dextrous, and practised operator. The incision also has to be followed by iridectomy. If the success of Von Graefe's operation is as eminent in other hands as in his own it will in all probability supersede the scoop and flap operations. It not only offers all the advantages of the former,

viz., the administration of chloroform (inadmissible in the flap operation) and the linear shape of the incision, but yet one more very important one, that in the great majority of cases the lens may be removed without the aid of any traction instrument. This operation is described in the present volume. (Mr. J. S. Wells, p. 249.)

Corneal Opacities.—In cases of diffuse corneal opacity resulting from parenchymatous inflammation, inject into the conjunctiva, immediately around the cornea, a solution of chloride of sodium (a scruple to the ounce of water). The injected fluid must be introduced at one point about a line and a half or two lines from the cornea, whence it will flow round the cornea, surrounding it with an elevated ring like that of chemosis. This soon disappears. In five or six days, by which time the irritation from the injection will have disappeared, the cornea begins to clear from the margin. After three or four weeks the injection may be repeated; and after from three to five injections the formation of an artificial pupil has been practicable. (Prof. Rothmund, p. 262.)

Deafness.—*Artificial Support in Certain Forms of.*—It is singular that the wetted cotton-wool of Yearsley, so useful in cases of loss of the membrana tympani, is sometimes useful in cases in which that membrane is entire. These cases are explainable by a disconnection sometimes occurring between the ossicula. A number of specimens of this were exhibited by the late Mr. Toynbee at a meeting of the Royal Medico-Chirurgical Society, in February 1866. (Mr. E. Bishop, p. 270.)

Collapsed Membrana Tympani.—The simple procedure introduced by Politzer for inflating the tympanum affords a means of restoring a collapsed membrana tympani. The patient, being seated, takes a small mouthful of water, which he keeps in the mouth until at a signal given by the surgeon he swallows it. The surgeon, standing on his right side, introduces into the nostril of the side to be operated on a small flexible tube, and with his thumb and fingers closes the nostrils over it. This tube may be connected either with an india-rubber bag, or with the surgeon's mouth; in either case he forces into it a sharp stream of air, at the moment when, at the given signal, the patient swallows. The air then rushes up the Eustachian tube (opened by the act of swallowing), and in the great majority of cases, especially in children, overcomes any obstruction that may exist. This condition of the tympanum is very common in children, and when detected, by examination with the speculum, may be treated with the greatest probability of a good result. In chronic cases of

otorrhœa it is generally combined with perforation. (Mr. J. Hinton, p. 272)

Side Blindness.—*Operations on a Diseased Eye, the other Eye being Sound.*—The question often suggests itself to us in practice, whether it is advisable to operate on an eye for formation of artificial pupil, or for the cure of cataract, when the other eye is sound. As a general rule this may be answered in the affirmative. In making an artificial pupil it must not be made laterally, or double vision will result. (Mr. H. Walton, p. 255.)

Spring Speculum for the Eye. — The spring speculum in common use has been modified by bending it backwards towards the temple of the patient, so that it may not be in the way of the hand of an operator. (Prof. Graefe, p. 238.)

Tarsal Ophthalmia.—*Brown Citrine Ointment.*—Dr. Williams, of Cincinnati, recommends a brown citrine ointment, made by dissolving mercury in nitric acid, and adding the solution to cod-liver oil, until effervescence ceases and the mixture thickens. The first product is granular, but being kept over the fire and thoroughly melted, and then stirred until cold, a perfectly smooth, soft, homogeneous ointment, of a rich brown colour, is obtained. All crusts being first softened and removed from the eyelashes, the ointment should be gently applied to the tarsal margins with the pulp of the finger, in most cases every night. (Dr. E. Williams, p. 258.)

MIDWIFERY, AND THE DISEASES OF WOMEN, &c.

Chlorosis.—*Bismuth.*—There are individual constitutions so intolerant of iron, so peculiarly affected by it, that we are compelled altogether to forego the administration of this useful remedy. Some patients cannot endure it, except in quantities insufficient to effect a cure. We are in consequence compelled to look about for a substitute, and the most efficient one is probably bismuth. Under the use of this metal gradual and satisfactory cures have resulted. Carbonate of ammonia and the salts of Peruvian bark are also of value. (Sir Henry Marsh, p. 76.)

Effervescing Iron Powders.—The following formula is excellent: —Bicarbonate of soda, fifteen grains; tartaric acid, ten grains; dried sulphate of iron, from one to five grains; powdered white sugar, half a drachm. This powder should be kept in a dry place, dissolved in a wineglassful of water, and taken whilst effervescing. (Sir Henry Marsh, p. 78.)

Endo-Metritis.—*Intra-Uterine Scarification.*—In the absence of positive evidence, the frequency of endo-metritis may be inferred from the fact that a large proportion of patients refer their ill-health to pregnancy, labour, abortion, interrupted menstruation, &c., changes directly affecting the uterine mucous membrane. This state of inflammation may be treated by intra-uterine scarification. The means by which it is accomplished is Lallemand's urethrotome, modified by the addition of a probe-point, and an elevation two and a half inches from the point, as in Simpson's sound. It consists of a steel tube (slightly curved between the point and the elevation), fenestrated on one of its sides, in the distal end of which is an inclined plane. A knife, half an inch long and one-sixteenth wide, when pushed forward in the tube mounts on the inclined plane, and projects through the fenestra. (See fig., p. 335.) The mucous membrane may be easily and safely scarified by this instrument, the knife being drawn, steadied by the finger, the whole length of the uterine cavity, and repeating this as many times as may seem necessary. Occasionally the operation is followed by a free flow of blood, but more commonly it is scanty, continuing for a couple of days, and corresponding in quantity to the usual amount of healthy menstruation for a similar period. The pain is slight, if the knife is sharp; but if dull, is proportionate to the degree of pressure requisite to make the incisions. (Dr. Erasmus D. Miller, p. 334.)

Fibrous Tumour of the Uterus.—*Slow Enucleation of, combined with Subsequent Avulsion.*—When enucleation of a fibrous tumour of the uterus is attempted, the final removal of the tumour is generally looked for too rapidly. Dr. Matthews Duncan recommends, and has adopted with success, the following plan of treatment. First dilate the os to sufficient size by sponge tents, when the upper part of the cavity of the cervix is not opened up as in the end of pregnancy. A sea-tangle tent may be used the first, but sufficient dilatation cannot be produced by their means. When the tumour, or its lower part, is at or near the os uteri, the cervix being developed as in the end of pregnancy, the os should be opened by the knife or scissors in preference to tents. These operations are sometimes impossible without hooking the anterior lip of the uterus by a fine tenaculum, in order to steady and draw forward the os. The tenaculum must be held by an assistant. By a guarded knife the thin portion of uterus still covering the tumour must now be divided. The incision must vary in length and depth, according to the size of the tumour and the possibility of safe cutting without

implicating neighbouring parts. This is not necessary while the tumour is still covered by uterine tissue. When this is done no further treatment is required for some time, and it will be found that the tumour is partially expelled by the contraction of the uterus. Little or no hemorrhage occurs during this time. After a time, when the tumour is partially removed by enucleation, its removal may be completely effected by avulsion—not rapidly, but gradually performed. The projecting portion of tumour must be seized with a strong volsella, and dragged and slightly twisted until removed. More than one pair of volsella are required, in order that when the operator feels his grasp yielding he may anew seize the tumour without its slipping back. (Dr. J. M. Duncan, p. 353.)

Mammary Inflammation.—*Acute.*—In a case of acute inflammation of the breast, fifteen drops of tartar emetic wine (one-sixteenth of a grain) were ordered to be given in half a wine-glassful of water every hour through the night, until eleven o'clock the next morning, a period of exactly twelve hours. Nothing local was applied except a piece of hot wet flannel, covered with oiled silk. By next morning the inflammatory hyperæmia was almost gone; the breast was only a little more swollen than the other, and there was scarcely any pain. It is curious that there was no appreciable nausea produced, nor indeed any other symptoms except a trifling diaphoresis. The medicine was given in the same quantity every two hours until the next day; then every four hours for another day; and in less than four days from the beginning of the treatment all signs of mammary inflammation had vanished. (Mr. J. K. Spender, p. 4.)

Mammary Tumours.—We must not rely too much upon *retraction of the nipple* as a diagnostic mark in cases of mammary tumour. This retraction is to be found under many different conditions; in the simple disease of the mamma, as well as in the malignant—in the inflammatory affections, as in others of a more morbid nature. Mr. Bryant gives some cases in support of this. In the first the breast appeared as a large globular tumour, of a firm consistence and a semi-fluctuating feel. The nipple was completely out of sight. The history of the case was that of inflammation, not running on to suppuration, and following a confinement nine months previously. After a time matter formed and was evacuated with relief. Nine months after treatment the breast was natural, but the nipple was still out of sight. Four somewhat similar cases are related. The same retracted state of nipple may occur in another simple disease of the breast, viz.,

cystic disease. In the first case related in support of this, the disease had existed four and a half years. It began by a swelling at the outer side of the gland. The position of the nipple was only indicated by a deep depression. In real cancer retraction of the nipple does not by any means invariably occur. Out of 222 examples of cancer of the mamma, of which Mr. Bryant has notes, a retracted nipple existed in only 32 cases. It is a curious fact, that a nipple which has disappeared in the early stage of a cancer may re-appear later in the case from pressure of the increasing mass. A retracted nipple may be described as an accidental symptom in the development of a tumour; it is the product of mechanical causes, and its presence is determined by the manner in which the gland is involved in the disease, rather than in the nature of the affection itself. Should any tumour attack the centre of the gland, a retracted nipple will ensue, from separation of the gland ducts, by which the extremities terminating in the nipple are drawn upon. (Mr. T. Bryant, p. 12.)

Midwifery Forceps.—*Improved Handle for.*—Dr. Inglis, Accoucheur to the Edinburgh New Town Dispensary, has introduced a modification of the handle of midwifery forceps, whereby more traction power is gained with a very short handle. A reference to the wood-cut at p. 320 will at once explain the instrument. No power of compression can be exercised, but Dr. Inglis says this is unnecessary with these forceps, traction by means of the horns of the handles being sufficient to keep the blades together. (Dr. A. Inglis, p. 318.)

More frequent use of the Forceps.—With proper care and undivided attention, the forceps are a most harmless, safe, and altogether admirable adjuvant in every-day obstetric practice. It is quite a wrong idea that we are bound to leave our patient to her own efforts till her safety is endangered. In so using them there must be no "fussiness," but it must be made light of, as if a matter of every-day occurrence. It is not always necessary to tell the patient what is going to be done. (Dr. J. Hardie, p. 321.)

Rupture of the Perineum from the use of the Forceps in Labour.—That the perineum is liable to be ruptured is one of the most frequent objections to the use of the forceps in labour. When the perineum is injured it is owing to the neglect of the precautions necessary to obviate it. The perineum must always be well supported, and great care must be taken to turn the handles of the forceps well over the pubic arch during extraction. On no account should traction be made in the long axis of the body in this stage. (Dr. J. Hardie, p. 327.)

Ovariotomy.—There are only two ways of securing the pedicle successfully in cases of ovariotomy—the actual cautery, or by means of the silver wire suture. The actual cautery is not always successful; but we have always a safe and sure resource in the silver ligature. The changes which take place around the ligature are singular and somewhat unexpected. In the course of a very short time the ligature is grown over by the pedicle becoming embedded in its substance. No surgeon can expect to perform this operation successfully who is in the constant habit of making dissections or *post-mortem* examinations, or of dressing erysipelatous or other poisonous wounds. (Dr. J. M. Sims, p. 365.)

Ligature of the Pedicle.—Mr. Bryant, of Guy's Hospital, has lately in seven cases of ovariotomy ligatured the pedicle in two portions and dropped it back into the abdomen, the ends of the ligatures having been cut off. One case only out of the seven proved fatal. (Mr. T. Bryant, p. 368.)

Polypus Uteri.—In some cases of polypus, where the vagina is narrow, and the uterus extremely rigid and completely filled by a very firm tumour, it is almost impossible to snare the growth with the chain of an ecraseur. Dr. Atthill, of Dublin, has had an ecraseur so modified (by Weiss) as to allow of the chain being passed round the growth by means of Gouch's canulæ, and of the canulæ then being passed the eye of the instrument and withdrawn, leaving the chain in its place in the ecraseur. (See woodcut, p. 340.) This plan, we believe, will prove very useful. (Dr. L. Atthill, p. 337.)

Pruritus Pudendi.—*Sulphite of Soda.*—The following lotion is stated by Dr. Frizell, of Grangerbury, Ohio, to be a successful application in cases of pruritus: Sodæ sulphitis ℥j, aquæ ℥iij, glycerinæ ℥j. It should be used frequently. (Dr. S. D. Frizell, p. 343.)

Self-Retaining Speculum.—Dr. Bryant, of St. Louis, U.S., describes a modification of Sims' speculum which has the advantage of being self-retaining. The vaginal blade is the same as Sims', but attached to this by a hinge-joint is a longer one, which, by means of a lever with screws attached, can be made to fit tightly to the sacrum and back. (Dr. G. S. Bryant, p. 342.)

Septicæmia from the Lochiæ.—*Hyposulphite of Soda.*—The disagreeable odour of the accouchement chamber caused by the peculiar smell of the lochiæ may be prevented by sprinkling the napkins with a solution of hyposulphite of soda. By this means a fruitful source of puerperal disease is avoided. (Dr. Constantin Paul, p. 378.)

Simulation of Pregnancy and Labour by Hydatids of the Uterus.—A case is recorded by Mr. Ley, of South Molton, which should make us careful in giving medico-legal opinions in cases of supposed concealment of birth. It is also of importance as regards the question of pregnancy. The symptoms in no way during the supposed term of pregnancy led to the suspicion of the real state of the case. The patient stated that she felt the child move distinctly, and that she suffered much from morning sickness during the first four months. The breasts were enlarged, and the areolæ developed. In due time labour came on, attended with severe hemorrhage, and the accoucheur thought the placenta was presenting. A large mass of hydatids was extracted—enough to nearly fill a large wash-hand basin. The secretion of milk came on copiously on the third day. Slight hemorrhage occurred twice within two months of the termination of the case. (Mr. R. Ley, p. 328.)

Stricture of the Cervical Canal of the Uterus.—We must never think of attributing dysmenorrhœa and physical obstruction to the passage of the menses until we are quite sure that all inflammation and congestion have been removed by depleting the womb, by vaginal injections, and by the use of agents which, like nitrate of silver, substitute healthy for diseased nutrition of tissue. When all traces of inflammation have been removed, it is time to infer that dysmenorrhœa depends upon some obstruction to the free passage of the menses, and this can only be ascertained by probing the womb. For ordinary use nothing is better as a probe than the ordinary wax bougies; they are more easily passed than a resisting sound. (Dr. E. J. Tilt, p. 331.)

Turning *versus* Long Forceps in Cases of Contracted Pelvic Brim.—In cases where the conjugate diameter of the brim is moderately narrowed, so that in despite of good pains the head is arrested, there can be no doubt but that turning ought to be the rule, and the use of the long forceps the exception. It is astonishing in what unpromising cases the hand may be introduced and the head of the child made to recede. The principal recommendations of this plan are that it can be adopted earlier in the case than can the application of the forceps, and, consequently, with less danger to the mother, whose strength is not exhausted by the length of the case. Also, the soft hand of the accoucheur is a far safer instrument than the hard steel blades of the forceps. Even when the blades are applied and locked the force required for extraction is often so great that it is a miracle for the soft parts to escape contusion and laceration. Out of 200 cases of this kind in

which Dr. Ramsbotham, of London, attempted version, he only failed fourteen times, and it seems probable that even these would have been reduced in number had chloroform been used to overcome the force of the uterine contractions and to induce relaxation of parts. (Dr. A. Milne, p. 320.)

Uterine and Rectal Cancer.—*Instrument for Injection of.*—The long, slender jet hitherto adapted to instruments for the purpose of injecting uterine and rectal cancer is very inefficient for the reason that it is difficult to avoid catching the point in the vagina or rectum, or puncturing the finger which serves to guide it to the part of the tumour intended to be injected, and also to ascertain how far the jet has penetrated. To avoid this, Mr. Ashton, of the Marylebone Infirmary, has invented an instrument which well answers the purpose desired. It will be understood at once from the woodcut at p. 11. (Mr. T. J. Ashton, p. 10.)

MISCELLANEA.

Disinfectants.—Chlorine and chloride of lime should be preferred for the disinfection of sick rooms; carbolic acid and carbolate of lime for drains, middens, and sewers; carbolic acid, chloride of zinc, or chloride of iron for evacuations; for stables and slaughterhouses, a mixed chloride and hypochlorite of zinc, which freely amalgamates with the liquid matters of the slaughterhouse without imparting unpleasant odours to the meat. (Dr. Letheby, p. 7.)

Ingenious Bullet Detector.—Mr. Sylvan De Wilde has invented an ingenious bullet detector. It is a probe, consisting of two steel wires, insulated from each other, and connected with an electric horse-shoe magnet and a bell. If, when introduced into a wound, it touches a bullet, the circle is completed and the bell rings. He has also invented a forceps, which act on the same principle; they are intended first to detect, then to seize the bullet. (Mr. S. De Wilde, p. 400.)

Iodide of Potassium.—It is well to combine iodide of potassium with carbonate of potash, in order to prevent iodine being set free in the stomach. (Dr. R. S. Sisson, p. 390.)

Preservation of Meat by Sulphurous Acid.—If meat be hung up in a chamber as air-tight as possible and filled with sulphurous acid by burning sulphur, all living germs are destroyed and decomposition does not take place. This might

be of use in preserving meat for importation into this country. (Dr. James Dewar, *Medical Press and Circular*, *Oct.* 3, 1866, p. 340.)

Prunus Virginiana.—The Prunus Virginiana, or American wild cherry, is a powerful tonic and calmative to the heart and arterial system. It has not the powerful effect of digitalis, but it is a valuable substitute for the latter when it is ill borne. Although not equal to it in the special relief which we need in extreme cases, Prunus Virginiana is a perfectly safe remedy. It is also useful in many cases of bronchitis, with feeble heart. (Dr. C. Allbutt, p. 372.)

Tincture of Podophyllin.—The following formula is a good one : Podophyllum, one grain ; spirits of wine, two drachms. Dissolve, and add tincture of hyoscyamus, two drachms. Dose : one drachm. When a stronger aperient is required, this tincture may be combined with a black draught. (Mr. F. W. Dunne, p. 378.)

PRACTICAL MEDICINE.

DISEASES AFFECTING THE SYSTEM GENERALLY.

1.—ON THE DIARRHŒA OF ENTERIC OR TYPHOID FEVER.

By Dr. George Johnson, Physician to King's College Hospital.

[During a quarter of a century Dr. Johnson has seen two different and opposite plans of treating the diarrhœa of fever. The late Dr. Todd gave repeated doses of opiates and powerful astringents. When the stools were frequent it was a common practice to give an enema of starch with laudanum, twice, thrice, or even oftener, in the course of the day. This practice was not attended with satisfactory results.]

All this has been much changed during the last few years. There has been no change in the type of typhoid fever; the disease is, in every respect, the same as in former years. There is the same intestinal ulceration; but the intestinal symptoms are far less troublesome. There is much less of obstinate diarrhœa, much less of distressing tympanitis; and this amelioration of symptoms is coincident with a complete change of practice. I have described the former mode of treatment. Our practice now is, as a rule, to leave the diarrhœa alone, and rarely to give opiates or other astringents to check it. You will understand, of course, that I am speaking only of the practice in my own wards. It is a most unquestionable fact that, since the discontinuance of the opiate and astringent treatment, the diarrhœa and the other intestinal symptoms have been far less troublesome to the attendants, and far less distressing to the patients.

And it appears to me that the explanation of these different results is not difficult. In most cases of typhoid fever, there must be more or less of diarrhœa; for there is ulceration of the bowel, and, as a consequence of this, morbid secretions are poured out, which irritate the bowel and have to be expelled. This is obvious, without entering upon any theoretical considerations. If now, while this morbid process is going on in the intestines, repeated opiates are given, either by the mouth or by the rectum, the effect is certainly not to stop or to check the

ulcerative process in the bowel, nor to prevent the pouring out of morbid secretions from the ulcerated surfaces ; but to lessen the sensibility and the contractility of the bowel, and so to retain the morbid secretions until they decompose, give off offensive gases, and thus become a fresh source of irritation and distress. I attribute the unfavourable results of this practice mainly to the effect of the opiates in preventing or retarding the expulsion of the offensive secretions from the bowel.

Not long since some of you had the opportunity of seeing the effect of discontinuing the astringent treatment in the case of a young woman who was admitted at about the end of the second week of typhoid fever. She had been under the care of a friend and former pupil of my own, and he told us that she had been treated by logwood and laudanum every six hours, yet, in spite of this, the diarrhœa had been profuse and frequent up to the very time of her admission into Twining Ward. I directed her to be put upon the usual fever diet, and to have a dose of coloured water three times a-day. The troublesome diarrhœa ceased immediately ; the bowels acted only once or twice a-day. She made a good recovery ; and my friend frankly admitted that the "let-alone" plan had been much more successful than his opiate and astringent treatment.

In our endeavour to explain the undoubted fact, that the intestinal symptoms of typhoid fever are now much less troublesome than in past times, it is right to mention that in some other particulars our treatment has been modified. We now give much less medicine of every kind than we formerly did ; and, in particular, we avoid the risk of irritating the bowels by repeated doses of mineral acids. We give alcoholic stimulants more sparingly and with more discrimination. As a rule, we give none during the early stages of the fever : when I am convinced that their indiscreet employment often increases febrile excitement, cerebral oppression, and gastro-intestinal irritation. In short, our chief reliance now in the treatment of this fever is upon rest in bed, with good nursing, judicious feeding, and stimulants when necessary. Our fever patients are fed mainly upon milk, beef-tea, eggs, and arrow-root.

If you refer to Trousseau's *Clinique Médicale* (tome i. p. 258), you will find that his practice, when the stools of typhoid fever are frequent and abundant, is to give saline purgatives — either sulphate of soda or a Seidlitz powder. This treatment he thinks especially indicated, when the diarrhœa is associated with much flatulent distension of the bowels, and in such cases he repeats the dose several times. If, after this, the diarrhœa continue, he gives what he calls absorbent powders—nitrate of bismuth in combination with chalk, and in some cases small doses of nitrate

of silver—but he makes no mention of opium as a remedy in this class of cases.

When the intestines become much distended by a mixture of air and liquid, the relief which follows evacuation of the bowels is often great and permanent. This may sometimes be effected by a laxative enema, but in most cases more surely by a tablespoonful of castor oil combined with a few drops of laudanum in some aromatic water. In such cases, if we can get rid of irritating secretions by a mild evacuant, we are acting on the principle which should continually guide us in the treatment of typhoid fever; namely, to ensure as much as possible of rest for the diseased intestine. The intestines in these cases may be irritated by uncalled-for drugs, by injudicious feeding, by the untimely or excessive administration of alcoholic stimulants, by the accumulation of morbid secretions within the bowels, by muscular exertion on the part of the patient, or by rough pressure over the abdomen on the part of the practitioner. All these known sources of irritation and of injury ought, therefore, to be most carefully avoided.

In conclusion, let me say emphatically that, when peritonitis is threatened or actually present, whether the result of perforation of the bowel or of the ulcerative process extending deeply into the tissues, our main reliance is upon absolute rest, light hot fomentations over the abdomen, and opium in full and frequent doses. I have seen cases apparently the most desperate recover under this plan of treatment; one case in particular, that of a girl, eleven years of age, in whom all the symptoms of perforation of the bowel were present. In such a case, when recovery takes place, however sudden and severe may have been the onset of the peritoneal symptoms, it must of course remain doubtful whether perforation of the bowel had actually occurred. —*British Medical Journal*, *March* 16, 1867, *p.* 279.

2.—ON THE USE OF THE SULPHITE OF MAGNESIA IN THE TREATMENT OF ZYMOTIC DISEASES.

By H. R. De Ricci, Esq.

M. de Ricci thinks that the want of success which has sometimes been observed in the treatment of zymotic diseases by the alkaline and earthy sulphites, is attributable to the fact that these remedies have not been administered early enough. If the treatment is too long delayed, the blood becomes so loaded with poison and deteriorated in quality as to be no longer able to perform its normal function, and then the sulphites are of no more service than any other remedies, because they cannot restore to life the dead blood-corpuscles. The sulphites should

therefore be administered early, while still a large portion of the blood is in a healthy state, and capable not only of carrying on life, but of throwing off what has been rendered inert by the presence of the sulphuric acid. M. de Ricci attributes another source of failure to the administration of hyposulphite of soda, instead of the sulphites, and especially the sulphite of magnesia. The hyposulphite of soda is less efficacious than the sulphites, because in the former the greater part of the acid becomes oxidized in its passage through the animal economy, and appears in the urine as a sulphate, because, being a salt of hyposulphurous acid, it is a less active anti-zymotic; and because it often causes a troublesome diarrhœa, while the sulphites of soda and magnesia never produce such effects. M. de Ricci prefers the magnesian salt for internal administration, as it is less unpalatable, and contains a larger proportional quantity of acid than the soda salt; but he uses the sulphite of soda for external application, because, from its greater solubility, a stronger lotion may be made with it. The sulphites of potash, lime, and ammonia are also active anti-zymotics; but they are in no way superior to the salts of magnesia and soda, while their very noxious taste renders them objectionable. M. de Ricci relates some cases illustrating the efficacy of the sulphites, and he concludes his paper by predicting that eventually the treatment of zymotic diseases by the administration of the sulphites will be as fully recognised as that of ague by cinchona.— *British and Foreign Medico-Chirurgical Review, April*, 1867, *p.* 523.

3.—ON THE INTERNAL USE OF TARTAR EMETIC IN ACUTE INFLAMMATIONS.

By Dr. John Spender, Surgeon to the Eastern Dispensary, Bath.

[Dr. Spender was sent for to see a lady whom he had attended in labour fifty-eight hours before. She had symptoms of acute inflammation in the left breast. Having gone through mentally all the most likely plans of treatment, he says:]

In quiet despair I took up the fourth edition of Dr. Churchill on Diseases of Women, and on page 752 I found an apposite quotation from Dr. Beatty, who says that, on the accession of inflammation in the breast, he has given one-sixteenth of a grain of tartar emetic every hour, with the result that in ordinary cases the pain and fever are mitigated, and the breasts are smaller and softer. He say that these doses may induce slight nausea, but never or very rarely free vomiting. Dr. Churchill ratifies Dr. Beatty's opinion by saying that tartar emetic, given in this

form, has a more powerful effect in abating inflammation of the breast than any medicine he has ever tried.

Armed with this knowledge, but slightly sceptical as to its entire truth, I visited my patient, and discovered that acute lobular inflammation of the breast had set in, and was marked by all the usual symptoms. Fifteen drops of tartar emetic wine (one-sixteenth of a grain) were ordered to be given in half a wineglassful of water every hour through the night, until 11 o'clock the next morning, a period of exactly twelve hours. Nothing local was applied, except a piece of hot wet flannel covered with oiled silk.

After twelve doses of this medicine, administered with unfailing punctuality, it is no exaggeration to say that the inflammatory hyperæmia was almost gone; the breast was only a little more swollen than the other, and there was scarcely any pain. It is pleasant to add, that there had been not only not the slightest vomiting, but even no appreciable nausea. Indeed, for anything that appeared to the contrary, (barring a trifling diaphoresis) the patient might have been taking so many rations of pure water. The medicine was given in the same quantity every two hours until the next day; then every four hours for another day; and in less than four days from the beginning of the treatment, all signs of mammary inflammation had vanished.

On September 25th, I attended in a very rapid labour another lady, who recovered without a bad symptom, except that on the fourth day after delivery signs of inflammation of the left breast were suddenly developed. The chief characteristic of this patient is an extreme sensitiveness to pain, so that an ordinary neuralgia causes a quasi-delirium, requiring opium to subdue it, and to restore healthy function. In this case, therefore, on account both of the tendency to delirium and an irritability of bowels, I combined one drop of tincture of opium with fifteen drops of tartar emetic wine, and administered it in water every hour for fourteen hours. After five doses had been given, profuse diaphoresis occurred; coincident with this the pain suddenly went away, and sleep followed; and in three days from the time at which the treatment was begun, there was scarcely a relic of what had happened. Here, as in the first case, the doses of medicine were reduced in frequency by degrees, and no local means were used except the wet flannel and oiled silk.

Within the first week in October, a sempstress applied to me at the Eastern Dispensary, on account of a common whitlow of the thumb, in the very first stage of heat, swelling, and pain. The tartar emetic wine was given in the same doses, and with the same result of complete success.

A week afterwards, I was asked to see a domestic servant in a gentleman's family, with a whitlow of the index finger. She, too, had all the classical symptoms of whitlow (which, you may remember, Erichsen calls an erysipelatous disease), and she obediently took the tartar emetic medicine every two hours for a day and a night. So much better was she then, that she called herself "well"; but, alas for her prognosis! the result of her abandoning the medicine too soon was, that the disease returned, and ran the usual course of a whitlow, in spite of the medicine being diligently taken again, and in spite of every local means, scientific and empirical.

About the end of October, a married woman came to the Dispensary with threatening lobular inflammation of the right breast in the tenth month of lactation; the pathological sequel of over-nursing in a weak constitution. For three days she took the tartar emetic medicine (in the dose already specified) every three hours, and being well supplied with nutritious food, she seemed nearly well at the time of the next attendance. Here my own prognosis was at fault, for I rashly ventured to leave off the tartar emetic mixture, and substitute a ferruginous tonic; and a complete failure it was, for I had at last to deal with a chronic mammary abscess in its usual troublesome form.

In nearly all these cases, a mild aperient was the only other medicine given. If there had been time, I might have related other cases of external inflammation cured by precisely the same method.

On reviewing the histories just narrated, it is noticeable that the inflammation is of an external and visible kind, and that it has in it something of a pyæmic or erysipelatous quality. These two circumstances seem to be the chief factors on the part of the patient. On the side of the remedy, we observe that it is administered in very frequent and minute doses, and that its successful therapeutic effect can be produced without the physiological discomforts of the slightest vomiting or nausea.

First, then, as to the nature and extent of the inflammation; it is familiar to everyone how antimony can abate and utterly abolish inflammation of viscera and of mucous membranes by its depressing and shock-like power—acting distinctly on the nervous system. We seek to illustrate this power by the old antiphlogistic terminology—or as Pereira expresses it, tartar emetic is useful in inflammation and fever by its contrastimulant, sedative, and sudorific influence. I have spoken in this paper, however, solely of external inflammations, for as yet I have made no inquiry into the effects of minute and frequent doses of tartar emetic in the internal inflammations.

Note, then, that tartar emetic, given in the dose of one-sixteenth of a grain every hour at the very outset of a cutaneous

inflammation, may control and cure that inflammation with its attendant pyrexia, How does it do so? The action of this medicine has been well expounded by Dr. Billing and Dr. Headland. Dr. Headland lays emphasis on its neurotic influence; and Dr. Billing has entered largely into the subject, and with a certain boldness of language speaks of the tonic properties of antimony and calomel. That is to say, the capillary blood-vessels, being distended in normal inflammation by the stasis of their contained blood, are reduced in size by the action of antimony on the vaso-motor nerves—the blood is propelled onwards—exudation is checked—and heat, pain, redness, and swelling go away. In brief, the inflammation is summarily put an end to, and that not by any weakening of the nerves of the capillaries, but by endowing them with more life. Any substance which does this must be described as an instrument of tone and power.

I believe that the influence of medicines given in very small and very frequent doses has not been sufficiently studied. I have long been engaged in investigating this subject, especially with reference to opium. There are many and obvious hindrances, such as the trouble imposed no the attendants, the difficulty of testing regularity of administration, and the possibility of dangerous accumulation in the system; but the advantages are often enormous—and sometimes only in this way can we gather all the good out of a medicine without any of its harm.

Studying the action of tartar emetic in an enlarged manner, and with special reference to the physiology of inflammation, we can make no claim to its having particular control over inflammation of the breast more than inflammation elsewhere, as some obstetric authors have imagined. It cures inflammation, as we see it on the outside of the body, by an orderly sequence of phenomena, by its toning power on the vaso-motor nerves, by the return of the capillary bloodvessels to a healthy size, and by absorption of the inflammatory effusion. The occurrence of suppuration is a signal that the remedy can be of no use. There need be no nausea and no vomiting, and nothing beyond a general diaphoresis and possibly diuresis. And the rest of the treatment consists in the application of common sense to every emergency that may arise.—*British Medical Journal, March* 23, 1867, *p.* 313.

4.—THE COMPARATIVE VALUE OF DISINFECTANTS.

Dr. Letheby has supplied the Registrar-General with a detailed statement of his practice, as health officer for the City of London, in regard to the several disinfectants used by him

for the various purposes required. Dr. Letheby prefers chlorine and chloride of lime for the disinfection of sick rooms; carbolate of lime and carbolic acid for drains, middens, and sewers; carbolic acid, chloride of zinc, or chloride of iron, for evacuations; for stables and slaughterhouses, a mixed chloride and hypochlorite of zinc, which freely amalgamates with the liquid matters of the slaughterhouse without imparting unpleasant odours to the meat.—*Lancet*, *Dec.* 1, 1866, *p.* 651.

5.—ON THE TREATMENT OF PRIMARY CANCER.

By Charles W. Moore, Esq., Surgeon to the Middlesex and to St. Luke's Hospitals.

[Speaking of the injection of cancers with acetic acid the writer continues in the latter half of his paper,]

It is not yet possible to foresee the extension of which that method of treating cancer is capable. I have myself much hope from the employment of it; but I am already satisfied by its effects in secondary tumours, that it is not yet made applicable to the primary. From the first promulgation of this treatment by Dr. Broadbent, I have never used it or advised it in any case for which the ordinary operation was adapted, as it did not appear right to essay a remedy so little tried, and the adequacy of which for relieving all conditions of the disease was uncertain, in any person entitled to treatment known to be effectual. Already I have come to know that both disappointment and damage have resulted from an experimental use of the acetic acid in cases of primary cancer of the breast, which were fitted for removal by the knife. It is the more incumbent on me to say this, as by announcing the destruction of cancerous matter in the interior of a lymphatic gland with this acid, and the absolute dispersion of small recurrent subcutaneous cancerous tumours by the same means, I may unwittingly have encouraged others to what I cannot but think a misapplication of the remedy. So ready a method of disposing of cancer is not yet won. Its unseen diffusion beyond the apparent limits of a tumour, is too certain a fact to justify confidence in injections for the removal of it. Neither is it to be yet expected of a remedy so slow in its action, and the management of which is far from perfected, that it should all at once supersede the the more sure operation. The condition of primary tumours appears to me to make them particularly unfit for this treatment, for whilst they are growing, and may be large, the acid can only be thrown into them in small quantities, and at intervals. If used in a large quantity, it produces suppuration or sloughing, a disastrous action of a remedy in a primary cancer; and in

any quantity it produces swelling, with consequent uncertainty as to the area over which the effect of the acid has been secured, and delay in pursuing the treatment. Meanwhile the tumours continue to grow in the parts concealed by the swelling. I cannot think this to be right treatment of a primary cancer.

Such objections may appear to relate no less to a secondary, recurrent, or advanced, than to a primary tumour; but the circumstances are in fact very different. The treatment of the latter disease is avowedly undertaken with less prospect of advantage than that of the primary. In those advanced cases the acid can achieve the reduction always, and sometimes the removal of the morbid mass; and it is only in such cases, where established methods of treatment are unsatisfactory, that those which make greater promise ought to be proved.—*British Med. Journal, Feb.* 9, 1867, *p.* 138.

6.—LARGE CANCEROUS TUMOUR OF THE NECK AND FACE TREATED BY INJECTION OF ACETIC ACID.

Under the care of Dr. Broadbent and Dr. Randall at St. Marylebone Workhouse.

The tumour was of large size, and extended so far in the neck as to interfere with deglutition and displace the larynx. The first injection on October 3 was followed by extensive destruction of the diseased mass, and it was then found to have arisen primarily from the bones of the face. The muscles and vessels in the neck were laid bare, but healthy granulations sprang up, and the wound in the skin was contracting.

On Oct. 23 the note was :—Healing rapidly, progressing below; still great enlargement about the face. Great cavity at seat of last injection (over lower jaw). Patient more comfortable.

26th.—The old woman looking and feeling decidedly better. No great change in the face. The cavity had been filled, and the wound dressed with cotton saturated with dilute acid.

A solid mass about the centre of the disease, over the superior maxilla, was injected, the needle being passed to near the limits of the disease. The acid was retained better than before ; it gave greater pain. An injection also upwards, in the direction of the malar bone, not well retained.

The needle could not be passed equally in all directions, bony projections being met with too firm for penetration.

30th.—Again injected. The needle was forced through a series of thin bony laminæ in an upward direction.

Nov. 6th.—Considerable pain and inflammation followed the last injection for two or three days, and there was a copious

discharge. No marked change in the tumour could be detected, the bony prominences preventing the skin from subsiding. No injection was made.

Later, after careful examination, it was decided to watch the progress of the disease for a time before pushing the treatment further. It was evidently not possible to eradicate the tumour, springing as it did from bone. The osseous projection interfered with the passage of the needle, and the intervening structure was so soft as to allow of the ready escape of the fluid. There was no longer any danger to life, or any considerable suffering, and thus no object existed of sufficient moment to warrant the infliction of the pain which must have attended any attempt to remove the disease completely.

Dec. 20.—No occasion for interference has arisen. The tumour has increased somewhat in size, but not so as to add materially to the existing deformity. Mastication is rendered difficult, but she swallows well, and is in a state of comparative comfort.

The only result which could be looked for in this case was destruction and sloughing, and it was one of those exceptional instances in which the employment of acetic acid to this end could be recommended. The tumour caused suffering, and, from its size, threatened the life of the patient. Removal by the knife was out of the question. Experience had given sufficient reason to believe that the acid injected would destroy the vitality of the morbid growth, and would discriminate between healthy and diseased structures. It was hoped also that there would be little pain or constitutional disturbance. The expectations formed were justified. The great size of the mass forbade the attempt to remove it at once, but more might have been done at first with advantage. The acid used was of uniform strength throughout, $\frac{1}{4}$—that is, one of acid to three of water.—*Med. Times and Gazette*, *Feb.* 23, 1867, *p.* 194.

7.—A NEW INSTRUMENT FOR INJECTING CANCEROUS TUMOURS OF THE UTERUS AND RECTUM.

By T. J. Ashton, Esq., Consulting Surgeon to the Marylebone Infirmary.

[The treatment of cancer by means of injection with dilute acid is still *sub judice*, time only can decide as to its value.]

In injecting uterine and rectal cancer, I found the long slender jet hitherto adapted to the instruments very inefficient, for the reasons, that it was difficult to avoid catching the point in the vagina or rectum, or puncturing the finger which served to guide it to the part of the tumour intended to be injected,

and also to ascertain how far the jet had penetrated. To obviate these objections I have had made two tubes, the one sliding on the other. To the inner one is attached a fine gold jet with a sharp point; the outer one, which is the size of No. 6 urethral catheter, and two inches shorter than the inner tube and jet combined, is rounded at the upper end, and perforated by a hole sufficient to admit the passage of the jet. The two tubes combined form a large blunt jet, which, being fitted to a syringe, is readily passed along the finger, without the possibility of injury either to the operator or the patient; the outer tube is arrested by contact with the tumour, and the inner tube is pushed on, making the jet penetrate the tumour, the depth to which it does so being indicated by the graduations at its outer extremity.

The annexed woodcuts show at a glance the details and principle of the instrument. It was made by Mr. Mayer, of Portland-street.—*Lancet, Jan.* 19, 1867, *p.* 80.

8.—INJECTION OF SCIRRHUS WITH ACETIC ACID.

By Peter Stewart, Esq., Glasgow.

[The following suggestion is interesting and of much practical value.]

At a consultation with Dr. Lyon and Dr. J. G. Fleming on a patient of mine with a scirrhous tumour of the right mamma, it was resolved to try the treatment by injection with acetic acid, lately introduced by Dr. Broadbent. On the 6th of last December the treatment was commenced, and was followed for four hours by severe pain. In a few days the injection was repeated, and the pain continued eight hours. Dr. Fleming therefore suggested that one-third of a grain of the acetate of morphia should be added to the injection. On the next occasion that was done, and in a few minutes the patient fell asleep, and slept soundly for four hours; when she awoke she was free from pain. The acetate of morphia has been added to every injection since, and always with the same happy result. The tumour was diminished consider-

ably, and the nipple, which was very much retracted, is now much less so.—*Lancet, Feb.* 9, 1867, *p.* 191.

9.—ON THE DIAGNOSTIC VALUE OF THE RETRACTED NIPPLE AS A SYMPTOM OF DISEASE OF THE BREAST.

By Thos. Bryant, Esq., Assistant-Surgeon to Guy's Hospital.

[Mr. Bryant asserts in the following paper that retraction of the nipple is to be found under many different conditions. In the simple disease of the mamma, as well as in the malignant—in the inflammatory affections as in others of a more morbid nature. As retraction of the nipple is a symptom upon the presence or absence of which we all more or less rely in forming a diagnosis of mammary tumours, the subject is equally interesting and important.]

To the congenital, or naturally retracted nipple, I shall not allude, further than to state that it is well on examining a diseased breast with this condition of nipple, to bear this fact in mind, that the retraction of the part may have been a natural one.

The first series of cases to which I shall draw your sttention, in which this condition of nipple was present, will be the inflammatory.

Case 1.—*Chronic Inflammation and Suppuration of the Breast, with Retracted Nipple.*—Mary R., aged 41, a married woman, the mother of nine children, all of whom she had easily suckled, came under my care on August 25th, 1864, with an affection of her right breast.

She had been confined nine months previously, and had been able to suckle for a few weeks with the affected breast, but had not done so for some months when coming under observation. The disease had commenced with an inflammation of the gland, accompanied by great swelling, heat, and redness. By treatment, this had gradually subsided; but the parts were left hard, and somewhat tender. In about three weeks from its first appearance, the nipple began to disappear, and in about one month it had completely retracted. When seen, the breast appeared as a large globular tumour, of a firm consistence and semifluctuating feel. It was not very moveable, although it was not fixed; but the integuments over it were evidently "glued" by inflammatory effusion to the parts beneath; the nipple was completely out of sight; the axillary glands were unaffected.

Manipulation caused the patient some pain, and a dull aching of the part was also present. The woman's powers were very low. Tonics and good living were prescribed, with fomentations

to the breast. On September 1st, indications of the presence of pus were tolerably clear; some thinning of the integuments and parts beneath showing themselves near the nipple. The abscess was accordingly opened, and a large quantity of healthy pus evacuated. In three weeks this abscess had contracted, and had completely healed; but the nipple remained retracted, and the gland indurated; this latter, however, had much diminished. On July 13th, 1865, nine months after treatment, the breast was natural, but the nipple was still out of sight.

Case 2.—Chronic abscess in the centre of the Breast. Retracted Nipple from the appearance of the Disease.—Sarah M., aged 20, came under my care on December 31, 1863. She was a married woman, but had no children. She had enjoyed good health till eight months previously, when she received a blow upon the left breast. It was accompanied by severe pain, and was followed by swelling; this swelling gradually increasing.

When seen, the breast was much larger than natural, and to the hand felt hard and fluctuating; a globular tumour evidently existing in the centre of the gland. The nipple also was completely retracted; this retraction having come on gradually since the receipt of the blow. An incision was then made into the tumour at its lower part, and several ounces of pus evacuated. Convalescence rapidly followed. The condition of the nipple, however, remained unchanged.

Case 3.—Chronic Abscess in both Breasts; Retraction of the Nipple.—Rachel B., a childless married woman, aged 28, applied to me at Guy's Hospital on November 10th, 1864, with an affection of the right breast. It had existed for one week, and had come on without any recognised cause. It began by swelling; and appeared as a globular, tense, fluctuating tumour, in the centre of the mammary gland. The nipple, which had been quite natural, was completely retracted. An abscess was diagnosed; and a poultice ordered, with quinine. In two weeks, the abscess was opened, and three ounces of healthy pus evacuated; and, in another week, the breast had healed. The gland, however, remained indurated; and the nipple retracted on December 7th.

On February 1st, 1865, this same patient reappeared before me with a similar disease, running the same course in the left breast. The inflammation came on without any known cause. An abscess formed in the centre of the mammary gland, which required opening, and the nipple also retracted in the same way. On May 21st, 1865, the report states that the nipples were still retracted.

Case 4.—Retracted Nipple, the Result of a Chronic Inflammation of the Mammary Gland.—Emma W., aged 35, a married woman, the mother of two children, the first eight years since,

applied to me at Guy's Hospital, January 19th, 1865, with an inflamed and thickened right breast. It came on after her first confinement, eight years previously, with suppuration, and had become worse three years ago after her second; a sinus had existed behind the breast since that date, but the nipple had been retracted since the first attack. Her general health was good.

A drainage-tube was introduced into the sinus through its most dependent opening, and tonics given. In two months, the sinus had healed, and the woman left cured. The nipple, however, was still retracted.

Remarks.—In the cases I have already quoted, it will have been observed that the retracted nipples are the result of a chronic inflammatory affection of the mammary gland; and it is to be remarked that the retracted nipple was left as a result of the disease.

The next case I propose to read will illustrate the fact, that an acute inflammation of the gland may produce a similar condition.

Case 5.—*Abscess in both Breasts of an Infant; Retracted Nipples.*—A female infant, aged two weeks, was brought to me at Guy's Hospital on December 22nd, 1864, with abscesses in both breasts, brought on by the foolish attempt of an old nurse to express the secretion from the glands which always exists after birth. It had been present for ten days, and the inflammation was very severe. The glands were much swollen, and as large as half a walnut. The nipples were also completely retracted. The breasts discharged freely for some days, and then recovered. The contracted nipples, however, remained.

Remarks.—In the cases already quoted of inflammation and suppuration of the breast—a few only of the many which could be extracted from my note-book—the retraction of the nipple was a marked symptom; and they are amply sufficient to prove the truth of the remark, that such a condition is by no means unfrequent in connection with inflammation or suppuration of the mammary gland. It may occur during the progress of an acute or chronic inflammation in either an infant or an adult; and, as it has been already shewn, may be an early accompaniment and result of a chronic abscess.

I will now pass on to show that the same condition of nipple may exist in another simple disease of the mammary gland, the cystic disease, and to demonstrate the fact by the quotation of cases.

Case 6.—*Retracted Nipple associated with the true Cystic Disease of the Right Breast, for which Excision was successfully performed.*—Anne C., aged 49, a married woman, the mother of five children, all of whom she suckled, came under my care on

April 17th, 1865, with a disease of the right breast of four and a half years' duration. It began by a swelling on the outer side of the gland, and this has gradually increased. The nipple, which had been quite natural, soon disappeared, its position being indicated by a deep depression. The tumour had also been tapped at least six times, a brown glairy fluid having been drawn off at each operation. On her coming under observation, the breast and tumour were very large, measuring about a foot from axilla to sternum. The disease was evidently cystic; for its outline was smooth, globular, tense, and fluctuating. The skin was much stretched over the growth beneath, and adherent in several spots from the frequent tappings, but not in any way diseased. Firm pressure upon the tumour was also followed by a copious discharge from the nipple of a glairy, blood-stained, mucoid fluid; or rather from the depression representing its position. This discharge had been present at times during the whole life of the new growth. The patient's general health was good, and there was no disease of the axillary glands. I tapped the cyst, and drew off several ounces of the same glairy blood-stained fluid which had been drawn off on previous occasions; and, finding much solid growth beneath, advised excision. This was done on May 30th, and a rapid recovery took place.

The disease turned out to be a fine specimen of the *true* cystic disease of the breast-gland; that is, a disease of the gland itself, developed within its ducts, the cysts containing intracystic growths and more or less glairy fluid.

Case 7.—Cystic Disease of the Breast: Retracted Nipple.—S. M., aged 67, a married but childless woman, applied to me on June 13th, 1864, with a disease of her right breast of two years' standing. It had appeared as a gradual enlargement, and had been unaccompanied by pain. Her general health was also good. When coming under care, the tumour was evidently situated in the breast itself, and with it formed one mass; it was of about the size of a large fist, and very pendulous, hanging down from the thorax. It was quite moveable, and the integuments covering it in were healthy and uninvolved. The tumour was evidently made up of solid growth, as well as of cysts; these latter being of various sizes. The nipple was thoroughly retracted, and had been so for one year. There was no discharge from it, or any enlargement of the axillary glands. An operation was advised for this patient, but her consent was not obtained. She remained under observation for one month, when she left town.

Retracted Nipple in Cancer of the Breast.—The value of a retracted nipple as a sign of cancer will now occupy our attention; and I have placed it last on our list, as I thought it well to demonstrate first of all the fact that such a symptom is by no

means an uncommon associate of the inflammatory and cystic diseases of the breast; and that, as a consequence, it cannot with any certainty be regarded as pathognomonic of the cancerous affections. That it does occur in connection with a cancerous tumour of the breast, is not to be disputed; but that it is a frequent accompaniment of such a disease, is open to doubt; for, on looking over my notes of 222 examples of cancer of the mamma, I find that a retracted nipple existed in only 32 cases, or in about 14.4 per cent. Should the surgeon expect, therefore, to find it in all cases of cancer, he will be disappointed; and should its absence in certain cases lead him to regard a tumour as innocent, he will, in the majority of cases, be found wrong. This symptom may be found in the infiltrating form of cancer of the breast, whether partial or complete; that is, when the disease has involved the whole gland, or only a lobe. It may also exist in some examples of the tuberous cancer, in those instances in which the tuber is developed between the ducts, and by its growth separates them—thus acting mechanically upon the nipple, and causing its retraction; the retraction, under such circumstances, taking place towards the diseased part (Case 9). In the generally infiltrating form of cancer, the nipple simply retracts; and, at a later stage of the disease, it may reappear (Case 8), this reappearance being due to the increase of the disease and the mechanical pressure of the nipple forwards by the tumour beneath. These facts will be illustrated by the following cases.

Case 8.—*Infiltrating Carcinoma of both Breasts: Retraction of the Nipple in both during the Early Stage of the Disease; its subsequent Projection in one, in the Later Stage.*—Mary W., aged 58, a married woman, the mother of four children, all of whom she had suckled without difficulty, came under my care at Guy's Hospital on August 22nd, 1864, with cancer of both breasts. The disease had existed in the left side for two years, and had appeared as a general induration of the mammary gland. The nipple, also, soon began to retract, and the skin to become involved by infiltration. In about one year after its first appearance, the nipple reappeared; and when coming under observation, it was as prominent as it is usually found. The whole breast was very large, and generally infiltrated. The skin over it was adherent, and covered with cancerous tubercular infiltrations. The axillary glands on that side were also diseased.

On the right side, the breast was similarly affected, although not to such an extent as the left. The disease had commenced in the right gland one month previously, by a general induration of the gland, and retraction of the nipple, the nipple having entirely disappeared. The skin was also slightly puckered. In

about one month, tubercles appeared in the integument, and the axillary glands began to enlarge—the woman's health rapidly failing; the last notice in the report being on October 13th, that the patient was sinking.

Case 9. — *Tuberous Carcinoma of the Right Breast, and Retracted Nipple.*—Eliza Lee, a childless married woman, aged 54, came under my care at Guy's Hospital on July 28th, 1864, with a disease of the right breast of one year's standing. It had commenced by a swelling situated on the outer side of the right mamma, of a hard and stony character, this swelling gaadually increasing. After six months, a change appeared in the nipple, a slight dragging of the part towards the tumour being very manifest. This retraction steadily progressed; the nipple, when coming under observation, being drawn completely in. The axillary glands also soon began to enlarge, and the integument in the tumour to be infiltrated. When coming under my care, the tumour was of about the size of an orange, globular in outline, and very hard; it was evidently situated in the outer or axillary border of the mammary gland. The nipple was retracted almost out of sight, and drawn towards the diseased part. The tumour was fixed to the parts beneath, being quite immoveable; and the skin over it was also infiltrated. The axillary glands were likewise enlarged. In about one month, the skin began to ulcerate, and the powers of the patient to fail; the last report, made on November 24th, being, that the breaking up of the cancer was progressing rapidly, and the development of the tubercles in the integument increasing. The patient's powers were fast failing.

Remarks.—We have thus shown that a retracted nipple is an occasional symptom in acute and chronic inflammation of the breast; that it is found in the cystic disease of the gland, as well as in the cancerous; in fact, that it is met with *in all the diseases of the true gland, whether simple or malignant.* It is absent in the ordinary chronic mammary or adenoid tumours, simply because these tumours are not of the gland itself; and as a consequence, the nipple, with the gland-ducts, are not interfered with. In what way, then, it may be asked, is this retraction of the nipple generally brought about? It must depend on some general or simple cause, as it is found under so many different conditions; "for," as I have stated in another place (*Clinical Surgery*, Part v., p. 429), "a retracted nipple may be described as an accidental symptom in the development of a tumour; it is the product of mechanical causes, and its presence is determined by the manner in which the gland is involved in the disease, rather than in the nature of the affection itself. Should any tumour, simple or malignant—should any abscess, chronic or acute—attack the centre of the mammary

gland, a retracted nipple, in all probability, will be produced; for, as the disease so placed will necessarily cause material separation of the gland-ducts, their extremities—terminating in the nipple—must be drawn upon, and, as a consequence, a retracted nipple will be the result."

In an early stage of an infiltrating cancer of the organ, this symptom is one of *occasional* occurrence; the nipple being drawn towards the side of the gland, which may be involved. At a later stage of the disease, however, when the infiltration is more complete, the nipple may again project. In a central chronic abscess of the breast, the retracted nipple is equally common; and, in the true cystic adenoceles, it may be also present. The explanation of the cause of this symptom in all of these cases is alike, being purely mechanical, and in a measure accidental.—*British Medical Journal*, *Dec.* 8, 1866, *p.* 635.

10.—ON PYÆMIA.

By William S. Savory, Esq., F.R.S., Assistant-Surgeon to St. Bartholomew's Hospital, and Lecturer on Physiology in the Medical School.

[Mr. Savory considers the word pyæmia an unfortunate one. It was framed on the idea that in these cases pus must pass into the blood, and that its cells could be there demonstrated. Now that the pathology of pyæmia has been farther investigated, there appears to be no good grounds whatever for the idea that pus in the blood is a necessary link in the chain of causation. The distinction between ichoræmia or septicæmia and pyæmia cannot be established.]

The nature of pyæmia, and the best mode of preventing its occurrence, are more likely to be thoroughly worked out when the investigation is no longer clogged by the notion that it is necessarily due to a specific cause, or invariably associated with a peculiar local action. The view of pyæmia is at once enlarged in every direction when separated from the action of pus as its sole cause, and from phlebitis or thrombosis as a necessary condition.

Cases of pyæmia sufficiently well marked to be generally recognised as such vary widely in character. Many degrees of it are met with, from its most intense form, when it kills in a few hours, before the local effects have time to supervene, through the more ordinary acute attack in which the striking local effects are developed with appalling rapidity, on to its more chronic variety, in which whatever general disturbance there may be escapes observation, and in which the local effects few and far between, may be referred to some other cause.

The two following cases, for undoubted examples, contrast strongly and mark distinctly very different forms or degrees of pyæmia.

A strong, powerful man, aged thirty, a soldier, who had gone through much hard service, was admitted into St. Bartholomew's Hospital in August, 1863. A firm oval tumour, ill-defined, about two inches broad, uniform in outline, and somewhat tender on pressure, occupied about the inner half of the right clavicle. It had existed about three years, but until lately had given him very little trouble. He said his health was perfect, and no mischief of any kind could be detected elsewhere. The tumour was removed by operation, which was necessarily tedious, on account of the careful dissection required to detach the tumour from the subjacent parts. The clavicle was divided about an inch and a half from its acromial end, where the bone was healthy, and disarticulated at the sterno-clavicular joint, which was not involved. In the operation no vessel was divided of sufficient size to require a ligature. The tumour was in all probability an example of osteoid cancer.

The wound was closed, covered by a pad of lint, and the arm was bandaged to the side. The wound appeared to heal rapidly, and the man went on well without a bad symptom for ten days, when suddenly, without any warning, he had a severe rigor, followed by profuse sweating, and pain in the left arm.

During the next twenty-four hours his expression became anxious and distressed. He sweated profusely. His pulse rose to 130, and his breathing grew correspondingly rapid. Then the heart's sounds, although clear at the apex, were confused and accompanied by a distinct friction-sound at the base. Then the left wrist-joint became swollen and painful, but not hot or red. All this time the wound looked well, and the tissues around appeared healthy. The profuse sweating continued. The features, alternately flushed and pallid, became pinched and haggard. The pulse varied, but was always very rapid. The knees and other joints were soon swollen and painful. Abundant vesicles with inflamed bases appeared, but throughout there was no evidence of any pulmonary complication, and the wound never looked unhealthy. He sank rapidly, and died on the sixth day from the appearance of the unfavourable symptoms, and fifteen days from the date of the operation.

Autopsy, twenty-four hours after death. — The wound was partially closed, but the tissues around the inner part were the seat of diffuse suppuration. The remaining portion of the clavicle was natural. The left sterno-clavicular joint contained pus. The left wrist and intercarpal joints were healthy, but the sheaths of the extensor tendons crossing them were full of

pus. No pus was found in the joints of the opposite upper or of the lower extremities. The surface of the lungs was dotted over with small spots like ecchymoses gathered into clusters, many of them with soft yellowish centres. Posteriorly these organs were considerably congested. The pericardium contained some yellowish turbid fluid. Its cardiac portion was dull, mottled, rough, and about the base beaded with small nodules of easily detached lymph. In the substance of the heart were a few spots like those in the lungs. The endocardium and valves were healthy. Nothing abnormal was discovered in any of the other viscera, or in the condition of the veins of the neck around the wound or elsewhere.

Now contrast with the foregoing the following case :—

A pale, flabby, rather stout Irishman, aged sixty-three, was admitted into the hospital on February 24th, 1863. A scirrhous tumour, of the size of a walnut, involved the right mamma. He could not tell how long it had existed, but he had been aware of it for some months. No enlargement of the axillary glands. Four days after his admission the tumour was removed. Very little blood was lost. During the first week after the operation he complained of an unusual amount of pain in the wound, and was altogether low and depressed. He slept badly. Brandy and opiates were given regularly. The wound suppurated, but made little advance towards repair. Besides six ounces of brandy daily and full diet he took a drachm of liquor cinchonæ thrice a-day. During the second week, after the operation, the whole of the left lower extremity became œdematous and much enlarged. He complained of great pain in it, which gradually increased. There was no mischief about the superficial veins. No material amount of constitutional disturbance, but he appeared to be much exhausted. In the course of another week the swelling of the thigh gradually subsided, but the calf became indurated and very painful, and at length (March 20th) deep fluctuation was detected in that region. A free incision allowed about eight ounces of well-formed pus to escape. He had no rigor.

For the next twelve weeks he was very ill and feeble. Matter successively formed in different parts of the leg, and afterwards in the right axilla. The thigh still remained swollen, but no matter formed above the knee. He lost flesh, and hectic fever appeared, and became well marked. All this time he was supported by nourishment as much as he could take, and stimulants, in the form of brandy, whisky, and porter, with bark. The wound in the breast at length slowly cicatrised ; the discharge from the abscesses in the leg and axilla gradually subsided, and the wounds healed. By the uniform pressure of bandages the limb was gradually reduced in size, and at length

he was sent into the country convalescent five months after the operation.

But is not the evidence of blood-poisoning much oftener present in the course of certain affections than it is generally supposed to be; because the symptoms, although too striking not to attract attention and excite anxiety, are referred to other causes? The following case is, I believe, an example of a slight and transient form of blood-poisoning.

In June, 1865, I removed a small sebaceous tumour from a man's scalp. It was not larger than half a marble, and was situated on the right side, a few inches above the ear. Through a simple incision it was turned out without the slightest difficulty, and the wound, or at least the edges of it, united by direct adhesion. For the two following days there was no evidence of any disturbance whatever. Then the site of the tumour became somewhat puffy, as if fluid were accumulating beneath, and the man felt very ill and low. When I saw him at this time I was struck by his aspect. He looked very ill. His countenance was sunken, and he complained of much depression. He could neither eat nor sleep, and he had had one or two rigors. The glands in the right side of the neck were much enlarged, painful, and tender. Under the now united incision there was distinct fluctuation, and, when it was divided, well-formed pus escaped. From this time he gradually recovered without any farther mischief. Now this would once have been looked upon as a case of constitutional irritation; but was it not really a case of transient blood-poisoning?

Here is another illustration.

A delicate man, about sixty years of age, whose health had been previously failing for some months, consulted me on account of a large chronic abscess over the right buttock, which proved to be connected with diseased bone about the crest of the ilium. The abscess, and smaller ones which subsequently formed, gradually contracted, and at length nothing but fistulous passages remained, which led to bare bone. He has struggled on in this condition for several months, adopting every means which could be suggested to sustain his strength. But the present interest of the case lies in the fact that from time to time, and somewhat suddenly, all the signs of active constitutional disturbance would arise: fever, beginning with chills or distinct rigors, and accompanied by pains which be called rheumatic, by an icteroid tint of the surface, and by albumen in the urine. In a few days all these symptoms would gradually pass away, and leave him as before. I regarded them as indications of transient blood-poisoning from the absorption of the fluid furnished by the diseased parts.

Again, in ozœna, for example, after the fetid purulent dis-

charge has existed for weeks or months, without any sensible impairment of the health, rather suddenly the little patient will become extremely ill. There will be rapidly increasing weakness, running on into alarming prostration, with petechial spots over the surface, and all this without any other local mischief or imaginable cause than the ozœna. Such symptoms occurring under such circumstances are pathognomonic of blood-poisoning, and no other source of this can be detected than the ozœna. Why, after having existed so long without producing these effects, it should suddenly give rise to them is certainly difficult to explain. Such a putrid fluid as is formed in these cases is quite equal to the mischief; but we can no more explain why it should produce it at a particular time than we can explain the equally variable results of exposure to infection generally.

Here is a case in point.

A delicate little girl, at the age of five years, became subject to ozœna, which has continued with varying degrees of intensity during several years. Within this period, although obviously delicate, yet her general health has been, on the whole, tolerably good, with one remarkable exception. In her tenth year she became in a few days alarmingly ill and depressed with all the symptoms of low fever, and the whole surface was abundantly covered with petechiæ; but there was no internal hemorrhage. The countenance became pinched and expressive of collapse; the skin was dry and harsh; the pulse at times 140 or 150, and extremely feeble; the tongue dry and brown; the stools offensive. She could take little but brandy and champagne, by which means life seemed to be sustained for some days. She slowly recovered, and became as before. Was not this a case of blood-poisoning by the absorption of the fetid matter of ozœna?

What is commonly termed gonorrhœal rheumatism is held by some to be simply due to blood-poisoning from the absorption of matter furnished by the urethra, and therefore allied to pyæmia. Thus Dr. Chambers writes—"It is really due to a poison absorbed into the blood from a mucous membrane affected with purulent gonorrhœa, and thus has more claim to be classed by the side of pyæmia than in the position where it is now placed." And he points out what he considers to be the points of resemblance between the two affections.

That some forms at least of so-called gonorrhœal rheumatism are of this nature I cannot doubt. The following case appears to me to be a very suggestive one.

A man, aged twenty-two, was admitted into the hospital on July 5th, 1864, on account of great pain and swelling in the parts around the left shoulder. There was no marked redness,

but an obscure sense of fluctuation at the front border of the deltoid muscle. The forearm and hand were much congested and œdematous, but not painful. There was only very limited movement at the shoulder-joint, and this with much suffering, but with no perceptible grating or roughness. He was much exhausted, and looked very ill. He was an ostler, and had been in tolerably good health until fourteen days ago; but for some months past he had suffered from a tedious attack of gonorrhœa, with swelling of one testicle. He alluded also to frequent rheumatic pains flying about him. He had been rather badly off too, and had not always had sufficient food. Fourteen days before admission came rigors and headache, and the next morning his shoulder was stiff and swollen. The rigors recurred frequently since, and at times he sweated profusely. He was compelled to keep in bed, though without proper nourishment or care. He could not account for his illness in any way, and had certainly met with no accident. There still remained some urethral discharge. He was ordered ample nourishment and stimulants; morphia in full doses.

The day after his admission, when he had somewhat rallied, an incision was made along the front of the shoulder, in the interval between the pectoralis major and deltoid, which opened a very large abscess containing some pints of well-formed pus. It was still doubtful whether the joint was implicated. A few days later, another opening was made in the axilla, allowing a still freer escape of pus.

For some days there was no change to note in his condition. A profuse discharge continued. He was pale and exhausted, generally bathed in perspiration, with a pulse above 100, unable to take much food, disturbed and rambling in his sleep. On the 10th, in the evening, his respiration became hurried, shallow, and distressed; the face was flushed, and sweat streamed down it; skin hot, and studded with sudamina; with here and there on the arms and abdomen some dull-red, slightly elevated spots with inflamed bases; pulse 115, small. A very loud pericardial friction-sound was heard on the left side, and a systolic endocardial murmur at the apex. As far as could be ascertained, too, there was some diffused bronchitis through the left lung. Ordered: counter-irritation; bark; morphia at night; nourishment and stimulants freely.

During the next two days he rallied. The signs of bronchitis disappeared, and the cardiac friction-sound and murmur became less distinct. But he lost flesh and still sweated profusely. The eruption became very abundant and much more widely distributed, and now appeared as well-marked vesicles filled with puriform fluid, with very bright red bases. Then his left knee-joint became painful and swollen, and at length full of fluid.

His heel, apparently from mere pressure on the bed, became inflamed, and a large abscess formed around his ankle. This was opened, and discharged copiously, the wounds about the shoulder-joint still continuing to pour forth pus freely. This also extended along the course of the brachial vessels, and eventually his shoulder-joint was but too clearly found to be disorganised.

For some time the issue of the case seemed doubtful. No other abscesses appeared, and now and then he rallied so as to arouse the hope that he might struggle through. Suddenly, however, his right knee was found painful and full of fluid. He became much jaundiced and rapidly sank. The friends would not allow any kind of examination to be made of the body.

But I am assured that cases of blood-poisoning occur the characters of which are yet more obscure than in any of the foregoing examples, and the symptoms of which are often still, as they hitherto have been, referred to some other affection.

One cannot, I think, resist the conviction that certain diseases which have been hitherto referred to particular organs are originally affections of the blood. Are not some forms at least of so-called disease of the kidney of this nature? No doubt the kidney may be, and often is, primarily at fault; but does not the presence of albumen, in some of its forms, in the urine in certain cases point to the blood rather than to the kidney as the seat of the mischief? When we remember that it can be experimentally shown that certain forms of albumen, if admitted directly into the blood without having been previously subjected to the action of the gastric juice or liver, are in some measure drawn off by the kidney and appear in the urine, as also does the substance known as albuminose if it remain untransformed in the blood, and this as a simple consequence of the facility with which it traverses organic membranes, we seem to have a key to the interpretation of some of the disorders which are included in the term "albuminuria." So again some forms of "pneumonia" are now regarded as the effect of a morbid condition of the blood; the pathology of these cases—as, for instance, the congestion and inflammation of the lungs supervening in fevers—being indicated by the morbid condition of the lungs which may be experimentally produced by the injection of poisons into the blood.

Take in illustration the following case, in which a putrid discharge from the nose was followed by symptoms of disease of the kidneys—prolonged albuminuria and anasarca.

A tolerably healthy man, about fifty years of age, who had lived freely in his former years, complained of pain and uneasiness in the nostrils, and this was soon followed by a fetid, purulent discharge, which, though small in quantity, persisted

obstinately, in spite of various measures, for some weeks. Beyond increased vascularity and abrasion of the mucous membrane nothing wrong could be discovered. At length, while the discharge still continued, his health gave way. He lost flesh and strength very rapidly, and was evidently seriously ill. Then albumen, in considerable quantity, appeared in his urine, which, however, was otherwise normal; and there was no local evidence of disease of the kidneys. This state of things remained for two or three weeks, when increasing emaciation and debility, and commencing anasarca, excited the gravest apprehensions. But he was removed to the seaside, and there he gradually improved. The discharge from the nose and the anasarca disappeared. He gained flesh and strength, and returned to town much better, but still with albumen constantly present in his urine. This in course of time diminished, and would for days together wholly disappear; but even for many months it could be occasionally found there. His health has never been equal to what it was before the attack.

The phrase "constitutional irritation" has been made familiar to us by the title of the well-known work of Mr. Travers. It is often employed to express an idea of the nature of certain symptoms resulting from a local injury. Many examples of this are described at length in the work just referred to and elsewhere. Now I cannot but think that a careful analysis of some of these cases, of the characters they present, of the relation of the general to the local symptoms, of the nature of the local mischief which for the most part determines the constitutional disturbance, and lastly, a careful comparison of these with other cases of undoubted blood-poisoning, will lead to the conviction that the blood rather than the nervous system is the channel through which the local passes into a general disease; that these cases are not, like some others, to be explained by the sympathy of the whole with a part through the nervous system, but rather that, here, the blood is contaminated by morbid matter formed in a part and so the whole is poisoned. I would not argue, of course, that every case is of this nature. I do not mean to suggest that all cases of so-called constitutional irritation are to be thus explained. No doubt certain of them might be selected as instances of a general disturbance from a local irritation through the nervous system; but what I submit is that in those cases which as a class are distinguished by well-marked and severe constitutional disturbance following, after an interval, upon what are called poisoned wounds—that in these at length morbid matter passes into the circulation, the blood is poisoned. It seems to me that the conclusion is the only one strongly supported by the evidence which a careful analysis of these cases yields.

See the cases related at pp. 177, 189, 193 (of this case Mr. Travers remarks, "The concluding part of this history resembles the action of a subtle poison absorbed into the system"), 199, 220, 225 of Mr. Travers's work for examples of what may have been cases, not of "simple irritation," but of blood-poisoning.

Erysipelatous inflammation around the wound, pain radiating therefrom—for instance, passing up a limb,—enlarged glands beyond, followed by abscess and fever, seem referable to poison rather than to the action of "a simple local irritant."

There is satisfactory evidence that not only erysipelas, properly so called, but also the erysipelatous or diffuse and spreading inflammation of the skin and cellular tissue—commonly called by surgeons erysipelas,—is due to blood poisoning. This view, which is in accordance with the character of the affection presented during life, is established by the results which are often disclosed after death.

Hectic fever is considered by some to be a chronic form of pyæmia. And when the character of hectic fever is considered, and the nature of the local affection upon which it so often supervenes, it must be admitted that the idea is not an unreasonable one. Mr. Hilton says—"I venture to reiterate the opinion which I have oftentimes expressed in my systematic lectures on Surgery, that the pathological cause of hectic fever associated with chronic abscess, or following its being opened, is absorption of unhealthy fluid engendering pyæmia."

Various disturbances of the general health may be due to slight and transient poisoning. The characters of many febrile attacks point to this.

If a disease be really infectious or contagious, catching as people say, there must be, it would seem, some *materies morbi*, some matter which is capable of transference. Excluding, of course, from consideration the propagation of such a disease as hysteria, in which, by the force of example, this morbid state in one person may provoke an outbreak in another, we cannot, I think, conceive the communication of disease from one person to another without assuming the existence of some morbid material. We cannot, I think, conceive how any disease which consists only in a perversion of the normal forces, or in an alteration of any normal structure, could be transferred from one person to another. So, again, we can see no good reason why a contagious or an infectious disease may not, under favourable conditions, become epidemic; but an epidemic disease may not be, necessarily, communicable, for we may believe it to be produced by certain conditions to which a number of persons are simultaneously subjected, without assuming the existence of any morbid matter whatever.

Of course, in many instances opinions differ concerning the

existence or presence of a material poison—in rheumatism, for example, and in some forms of cutaneous eruption,—but, excluding doubtful illustrations, there are many others left. For example, doctors are tolerably well agreed that a material poison of a definite nature, introduced from without, is at work in small-pox and syphilis.

On the nature of the poisons which produce what are called zymotic diseases we can at present only speculate. There is every reason to refer them to the organic kingdom; and whatever differences they may present among themselves—and that they are various seems shown by their effects,—they present these great features in common: they effect changes in the blood during a period of what is termed incubation, whereby they are themselves abundantly multiplied or reproduced. By this they are distinguished as a class from all others.

The effects of most poisons, as those furnished by the mineral kingdom, vary generally as the dose; but this cannot be said of all, of some animal poisons. So far as we know, the minuteness of the dose of these offers no guarantee that the effects produced will be proportionately mild. These latter then must have some mode of action beyond the former. Thus the poison may be either capable of reproduction in the blood as those which produce zymotic diseases, or at all events it must be capable of exciting changes in the blood in a different way and of a different kind from those produced by mineral poisons. The effects, for example, of the minute quantity of animal poison introduced through a puncture in dissecting cannot be explained by any mode of operation such as we may imagine mineral poisons to possess.

Now with regard to the poison exciting pyæmia as it commonly appears after injuries and operations, although, so far as clinical observation goes, whatever indications there may be, there is no clear evidence that the effects vary as the dose, yet in experiments upon animals the quantity of putrid matter or pus injected has a manifest and most important influence upon the result. Concerning these animal poisons, however, the question, What influence has the mere quantity of poison introduced upon the result? can never be answered while we are ignorant of the actual nature of the poison or poisons which act, of their mode of operation, and of the extent to which their action may be qualified by different conditions of the system.

Dead and decomposing animal matter is unquestionably more akin in its operation to inorganic and vegetable poisons than to those which provoke zymotic diseases. Although the first and last present many features in common, such as the general symptoms they produce and the individual organs they affect

and through which they are eliminated, and although the poisons in each case differ among themselves, both in character, such as volatility, and action, such as local determination, there is no evidence whatever that any dead and decomposing animal matter is ever multiplied or reproduced in the blood, or effects such changes in it that the system is henceforth no longer susceptible of its influence.

Under the title, poisoning of the blood, there may be arranged a large and most important class of diseases.

In the first place may come *inorganic* or *mineral poisons*, whether solid, fluid, or gaseous, introduced from without, and passing in through either the digestive or respiratory apparatus. Such, for example, are arsenic, prussic acid, and sulphuretted hydrogen.

Next, of organic poisons are *the vegetable*, introduced from without, and passing in like the former. Such, for example, are strychnia and ipecacuanha.

The action of these is, as the rule, in proportion to the dose.

Then of organic poisons are the *animal*. These may be introduced from without, and pass in through the stomach, as the flesh of animals under certain conditions.

Or they may be introduced—as they usually are—through wounds or abrasions, or perhaps through mucous membrane, or even sound skin; as the poison of dissection-wounds; of serpents and insects; of gonorrhœa and syphilis.

Of these poisons, some have both a peculiar local and a constitutional action: as the poison of syphilis, and that which produces the so-called malignant pustule.

Some organic poisons, whether they be classified as vegetable or animal, which are introduced from without, after passing in, perhaps usually through the respiratory apparatus, are capable of reproduction in the blood, having a period of incubation; as the poisons of zymotic diseases.

But animal poisons may be formed within the body itself, and pass into the blood: as that which produces pyæmia.

The symptoms of pyæmia may be thus enumerated:—It is generally ushered in by rigors, which are perhaps frequently repeated and sometimes severe. These are followed, often almost immediately, by profuse sweating and a very rapid pulse. Sometimes there is rather sudden and considerable increase of temperature. Then come restlessness, anxiety, depression of spirits, and marked failure of power. There is often a sense of weight at the præcordia, with frequent hiccough, sighing, and perhaps moaning. The pulse increases in rapidity, and at the same time becomes small and feeble, and the breathing hurried and oppressed. The patient lies bathed in perspiration, which is sometimes accompanied by

miliary vesicles scattered over the chest and adjacent parts. The temperature of the surface varies much from time to time. The skin is at first sallow, and gradually becomes yellow. The urine is scanty and high-coloured. The tongue for a time may remain clean, but is usually from the first tremulous. There are often, soon after, vomiting and perhaps diarrhœa; occasionally hemorrhage from the bowels. Then the general restlessness and deep anxiety, expressed in the pinched and haggard countenance, increase. The aspect is sometimes wild, oftener dull, vacant, and impassive. As the disease advances, the patient becomes incoherent, and there is low muttering delirium, but from this, at first, he rallies when addressed. The prostration grows extreme. The features become more shrunken; the skin more yellow. Pustules or petechiæ, or patches of congestion or of erratic erysipelas, sometimes appear. Often, too, a peculiar odour is exhaled from the body. There is a running, flickering, or imperceptible pulse; a dry, brown, or black tongue, with sordes on the lips and gums; often subsultus tendinum, and then death.

Coincidently with the advent of the general symptoms, the character of the wound, if there be one, often suddenly changes. The healing process is abruptly stopped. The surface becomes pale and glazed, the granulations shrink and become dry, the soft parts flaccid, and the discharge almost ceases, or becomes thin, watery, sanious, or fetid.

These changes are very soon followed by other local symptoms. Usually the best marked are sudden tenderness, with very rapid swelling of one or two or more, or sometimes of most of the joints, soon followed by a blush over the surface. Before long there is clear evidence of distinct collections of fluid. Pus, under these circumstances, is usually poured forth into the joints with extraordinary rapidity, and although this is often accompanied with much local distress, yet not unfrequently it will accumulate so insidiously that its presence, especially in the deeper joints, is not suspected during life. But although it very commonly happens in the case of the joints which are deeply placed that there are no signs of any local disturbance while they remain quite at rest and are not touched, yet the most acute sensibility will be evinced upon the slightest attempt at motion, or the least pressure.

Such are the symptoms collectively which are usually present in pyæmia, but one or more of them may be absent. Even the rigors may be wanting. But the rigors, the profuse perspiration, the rapid pulse, and the increasing debility quickly running on into extreme exhaustion and collapse, are the salient and characteristic features of pyæmia.

The diagnosis of pyæmia at its outset, after an operation or

accident, is often assisted by noting the period after the injury at which the earliest symptoms supervene. Rigors for example, occurring within a very few hours, are not usually so significant of mischief as those which occur after the lapse of a day or two.

[It is only in the worst and most rapidly fatal cases, where there has not been time for the local lesions to appear, that any change in the blood can be detected.]

In these cases the blood is found unnaturally dark and fluid, with few, large, black, soft, and imperfectly formed clots. Its power of coagulation is evidently much impaired. Such loose clots as are found possess hardly any power of contraction, and the serum which escapes is unnaturally coloured and turbid. This blood very soon becomes putrid. Indeed in extreme cases it may be said to be putrid at the time of death; for, however soon after the body is examined, there is evidence from its odour and the changes which the blood and soft tissues—as the spleen and other viscera, and often the muscles generally—present, of rapidly advancing decomposition. They may truly be described as already rotten.

The local effects may be thus described.

In various organs, spots and patches of congestion, more or less intense, varying from mere distenson of the bloodvessels to complete stagnation. The smaller of these—the spots—are, for the most part, well defined and regular in shape, with usually a circular outline upon section. They are of a dark-red or livid colour, sometimes slightly raised, and often indurated. In the larger patches all these characters are usually less pronounced. The colour is less intense, being generally of a more dusky hue, and less defined.

The exact condition of parts in the spots and blotches which first are formed is an interesting subject of inquiry. The term "ecchymosis" is commonly applied to these spots, but it does not appear that usually there is any evidence of actual rupture or extravasation. A careful examination of these spots with the naked eye and lenses shows that there is intense congestion and even stagnation in the focus of the mischief, with perhaps subsequent coagulation, and staining of the surrounding tissues from exudation of colouring matter; but there is no evidence, except in extreme cases, of actual extravasation of blood. Hence the term ecchymosis, thus applied, is not always strictly correct. The sequence of phenomena sketched above is indeed what might have been expected. One can see no reason why any rupture of the vessels should ordinarily occur.

In the neighbourhood of these congestions, and elsewhere, the organs are often infiltrated with effused serum.

Collections of pus in different stages of formation and change,

varying in size from mere purulent points to large abscesses yielding several ounces of pus; sometimes circumscribed and bounded by well-defined walls; at other times so diffused as to appear infiltrated among the tissues.

These secondary abscesses of pyæmia are by no means always simple collections of pure pus. Not only does the pus itself vary in quality, and present all degrees of consistency, from a thin sanious fluid with semi-solid flakes to a thick uniform glutinous substance, but it is often mingled with more or less lymph, which is either tolerably tough and cohesive, or soft, even fluid, with firmer shreds. At other times the whole collection has the character of softening tubercle. Still more rarely, it is throughout of a rust colour, tinted with blood.

Yet I think there can be little doubt that, as the rule, these purulent collections, when rapidly produced, consist of well-formed pus. For by its physical and other characters, both to the naked eye and to the microscope, the matter cannot usually be distinguished from that of any ordinary acute abscess. It seems, indeed, as if the character of these collections, in this respect, was mainly influenced by their rate of formation, and the time which subsequently elapses before they are examined.

The relation of the spots and patches of congestion to the abscesses has been clearly shown. They constitute the first stage of the process. Suppuration follows; not always, it is true. The mischief may fall short of this. The morbid process, after reaching a certain point, may recede, and the patch of congestion, or the deep-red or livid spot, instead of passing on into suppuration, may, after remaining for a while, clear up, and gradually disappear. But if they pass on into abscesses, they gradually soften towards the centre, which at the same time becomes paler, until at length a puriform fluid oozes out when a section is compressed. Afterwards there is a distinct collection of pus in the centre, with a halo of livid indurated substance, which gradually passes outwards into healthy tissue.

Occasionally, when the local action of the poison seems to have been more intense, the portions of the structure affected do not pass into a state of suppuration, but perish, and patches of gangrenous tissue are found after death. These extreme effects are not very common, and, perhaps, are more often seen in the cellular tissue and in the lungs than elsewhere.

In the same organ, after death, purulent collections in all stages may be seen. Livid or petechial spots, some softening in the centre, others exhibiting well-formed pus there, which is gradually lost as it is traced outward, passing into grey, and then into red, hepatisation, until nothing beyond congestion appears. Or simple collections of pus, with little or no surrounding disturbance, passing insensibly into healthy tissue, or

it may be abruptly defined, even encysted. Then these purulent collections become, by-and-by, more concrete at the circumference, while toward the centre they are still fluid. But at length, by inspissation they become caseous throughout, and, if life lasts, they will pass through still further degenerative changes. Thus they may assume the appearance of tubercle.

These local effects of blood-poisoning most commonly occur, and may be most conveniently studied, in the lungs. The lungs are not only, by far, the most frequent seat of these changes, but the lungs are often affected alone. It is a rare exception for them to be free when other organs are affected.

In these organs, purulent collections are usually formed, first at the base, and then proceed upwards, so that the greatest number and the most advanced are found in the lowest lobes. This has been pointed out by Dance as a distinguishing feature between these purulent deposits and tubercles. It has also been remarked that the right lung is oftener affected than the left. Again, in the lungs especially, though to a less degree elsewhere, the abscesses vary greatly in size and number; in some cases being large and few, in others small and numerous.

Sometimes, however, these secondary abscesses occur in the liver, when none are found in lungs or elsewhere, and these exceptional cases almost always admit of a satisfactory explanation. For the poison has been absorbed by the tributaries of the portal vein, and then arrested in the capillaries of the liver through which it must first pass.

However, it would appear that cases occur in which, while the lungs have escaped, the liver has been affected under circumstances which do not admit of so simple an explanation.

One of the preparations (18°43) in the Museum of St. Bartholomew's Hospital, is thus described :—

"Portion of liver from a man who died five days after amputation of the thigh for disease of the right knee-joint.—The parts divided were undermined by old suppurating sinuses; and the long saphena vein, where divided, was full of dark clots. Before death the opposite limb became œdematous, and its superficial veins hard and cord-like. The deeper veins generally were blood-stained, and their contents fluid. There were remains of an old clot at the junction of the femoral and profunda on the left side; but they were softened and broken down, apparently from decomposition, not by the process of disintegration which sometimes occurs during life.

"The liver was pale and rotten, and the hepatic veins distended. The thin margin of the liver was dotted with small ecchymoses, showing through the peritoneum. The spots in some places appeared to be certainly extravasations, in others only patches of loaded vessels.

"There were no morbid appearances in the lungs or pleuræ. But there were spots of ecchymosis on the heart, with bloody fluid in the pericardium."

But with the lungs, the liver, spleen, kidneys, alimentary canal, heart, muscles, joints, cellular tissue generally, and other structures, are very often affected.

Every surgeon knows that, in almost every case of well-marked pyæmia, one or two or more of the joints are the seat of purulent collections. Indeed, this affection of the joints is usually, during life, the most striking and distressing of the local effects. It is astonishing with what rapidity pus will often be poured forth into a joint under these circumstances, and it not unfrequently happens, when, after death, the joint is carefully examined, a large quantity of pus having been washed out, that only very slight traces of any morbid action can be discovered. Here and there perhaps may be discerned some increased vascularity, and probably some thickening, but the synovial membrane, although it may be somewhat pulpy, will be entire, and no amount of mischief can be detected apparently commensurate with the large quantity of matter which has been formed. But in some cases the tissues of the joints—the synovial membrane and cartilage—will be extensively disorganised. It will be obvious that they were being very rapidly destroyed. It does not follow, however, that every joint which is swollen and seems to fluctuate contains pus. Perhaps nothing beyond some slight increase of vascularity and infiltration of serum can be detected.

Lastly, it may be observed that these purulent collections and the accompanying mischief are by no means confined to the joints proper. They are often discovered in neighbouring structures, such as the sheaths of tendons.

I think it has been shown elsewhere that the local effects of pyæmia may be produced by the introduction into the blood of—

Minute particles of solid matter— such as disintegrated fibrine.

Putrid fluids which contain no solid particles.

Pus.

That in either case the immediate local effects are essentially the same. The most critical examination fails to detect any distinction in the engorged portions of tissue produced by these different means, except that when solid particles, which undergo no change, are employed, they may be discovered in the midst.

The action of fresh pus in producing these effects is mechanical. Either its cells, or the clots which it may form in the blood, become impacted in the capillaries. When putrid no doubt it acts in both modes.

Pus, then, has no peculiar or specific action when present in the blood. If putrid, it will act like putrid matters generally do ; or its globules may, under certain circumstances, like other foreign particles, become arrested in and block up the capillaries, producing effects already described.

The clinical relation of pus to the production of pyæmia appears to be this :—

Suppuration is a common occurrence, either on the surface of wounds or ulcers, or in internal parts.

Pus, as pus, cannot be absorbed ; that is, its solid particles, its corpuscles, cannot enter the circulation, except through some lesion of the blood vessels. Pus may pass into the circulation through an orifice in a vein : this occurrence, however, must be extremely rare. But the fluid part of pus may be absorbed. If this be not putrid no mischief will supervene.

Even if healthy pus should, by some rare chance, find its way into the circulation, no secondary abscesses would perhaps be, under ordinary circumstances, produced. For healthy pus may be, very often has been, injected into the circulation, without being followed by any purulent deposit whatever. None of the effects which are ascribed to pyæmia are necessarily produced by the injection of healthy pus.

But pus may become putrid, more especially if exposed to air in a wound, and the putrid fluid may be absorbed ; and this, like any other putrid fluid, will produce the effects to which the term pyæmia is applied. It will poison the blood. For when putrid pus is injected the symptoms of blood-poisoning, as after the injection of any putrid matter, will supervene.

It is undoubtedly a rare circumstance to find a case of well-marked and fully developed pyæmia without any evidence of the previous existence of pus in some part of the body. The previous existence of an external wound, indeed, is by no means necessary to the development of pyæmia. In children, on the contrary, it is perhaps most frequently seen in connexion with acute necrosis. But suppuration occurs in these cases.

Now one of the chief arguments of those who affirm that the passage of pus into the blood is the sole cause of pyæmia is drawn from the assumed fact of the constant pre-existence of a local suppuration. But the fact that pyæmia is so commonly preceded by the formation of pus admits of another, which I believe is the correct interpretation.

Pyæmia is due to the absorption of a putrid or morbid fluid. But such a fluid is hardly ever, can hardly ever be, poured out except under the circumstances in which pus will be formed. Nay, more ; no doubt this morbid, poisonous fluid is often the changed or partially decomposed fluid of pus. The conditions under which suppuration occurs are almost always the condi-

tions under which a putrid fluid will be formed and can be absorbed. Admitting fully, however, this relation of pus to pyæmia, it is nevertheless to be understood that there is nothing peculiar to pus upon which the production of pyæmia depends.

When one reflects upon the subject, it is not perhaps so difficult as at first sight it may appear to be to account for the fact that the same effects are produced by such different agents as poisonous fluids and passive particles of solid matter.

To take the second case first. It cannot be doubted that these minute particles act mechanically only, at least at the outset, by blocking up capillary vessels, and so inducing stagnation and congestion, which gradually spread; the farther consequences being determined by other circumstances, such as the extent of irritation thus set up, and the constitution and state of health of the subject.

In the first case also, stagnation is likewise induced, but by a different process. It is essential to a free capillary circulation that the changes between the blood and the tissues which there occur should proceed in a normal manner. It has been shown that whatever interferes with those mutual changes constitutes an impediment to the capillary circulation. Hence, then, the congestion and stagnation, more or less extensive and widely spreading, which ensue upon, or can be induced at pleasure by, the introduction of morbid matters into the blood. These may be altogether in the fluid form, yet, mingling with the blood, they must affect profoundly its constitution, and consequently the relation which it will hold to the tissues through which it circulates. Healthy nutrition is checked, the normal changes are obstructed, and, therefore, the capillary circulation is no longer free. The transmission of blood through the capillaries being hindered, it there accumulates, and at length stagnates. Thus obstruction to the circulation of the blood through the capillaries is the common condition arrived at in either case.

It is a significant fact that these different agents not only produce the same result, but affect principally and particularly the same organs—the lungs. In the case of solid particles, which obviously act by blocking up the capillaries, the lungs are the sole or chief seat of the mischief, by virtue of their position—their capillaries being the first that the blood reaches after its contamination,—their vascularity, and the minuteness of their capillary network. What other explanation, in the case of morbid fluids, can be offered of the fact, that here also the stress of mischief falls upon the lungs, than that the cause of it is likewise lodged in the pulmonary capillaries? In either case the organs beyond are more or less protected by the total or partial arrest of the mischievous matter in the lungs.

It may, perhaps, be said that, generally speaking, the spots of

stagnation and congestion produced by the injection of solid particles are smaller and more regular in outline than the patches produced by the injection of poisonous fluids. This variation, which constitutes of course no essential distinction, may be due to the fact that a fluid is more readily and widely diffused through portions of the blood than are solid particles.

It must be observed that the effects produced by the introduction of different matters into the blood is by no means uniform. They may differ widely. Thus, after the mingling of certain poisonous substances with the blood, instead of suppuration, gangrene of the lungs and other organs may be produced. This fact seems to be well established both by experiment and by observation. But does this result—gangrene—represent a difference of kind, or only of degree? Are suppuration and gangrene — to take these striking results — distinct effects of different poisons?—or, are they only different degrees of morbid action, determined by the intensity or quantity of the poison operating, and the condition of the system? All I can say is this: that the evidence before us does not warrant the conclusion that these effects are due to the action of different poisons.

The causes of the local congestions and suppurations in pyæmia may, therefore, be thus classified.

Stasis due to mechanical action: a blockade produced by the impaction of solid particles. According to their size—

Arterial embolism: by fragments too large to pass through the smaller arteries.

Capillary embolism: by fragments small enough to pass into the capillaries.

Stasis due to change in the blood produced by the admixture of morbid fluid: the local effect of blood-poisoning properly so called—

Capillary obstruction.

Stasis due to a combination of the two above-mentioned causes.

In all cases stagnation and congestion first ensue. The subsequent changes, whether towards resolution, suppuration, or gangrene, are determined by—

The action of the morbid fluid or obstructing substance. The changes it provokes.

The constitution and state of health of the individual.

Although the local lesions produced by blood-poisoning are the most striking of its phenomena, they cannot be considered to constitute the gravest effects of the disease. In truth they are but the secondary effects of it, and it is because of this poisoning and spoiling of the blood in the more acute or intense form of the affection that pyæmia is so fatal.* For the worst cases—those in which death is most rapid—reveal afterwards

the least signs of local disease. Indeed, in the very worst cases there has been no time for local mischief to supervene. The whole mass of the blood is so poisoned and spoiled that it kills outright. It is in the milder cases only that the local effects have time to develope, and to pass through their subsequent changes. Thus, although the local effects of putrid fluids and solid particles are essentially the same and produced in the same way, it must ever be borne in mind that in the case of putrid infection there is added to these the more terrible result of universal poisoning of the blood. And, in truth, it would be difficult to suggest any subject more worthy of study than the influence which this poisoning of the blood has upon the local lesions in determining the changes they subsequently undergo.

That the poison still continues active in the blood is conclusively shown, not only by the altered characters it presents after death, which have been already alluded to, but also by experiment. For example: Gaspard, having injected much putrid matter, which destroyed a dog, drew some blood from its uninjured jugular vein, which was without any putrid odour. It was defibrinated, passed through linen, and then four ounces and a half were injected lukewarm into the jugular vein of another very vigorous dog. The injection was followed by the usual symptoms of blood-poisoning, although the dog recovered, after vomiting and purging. After relating this experiment, Gaspard says, "It is certain then that putrid substances injected into the veins affect the general mass of the blood, notwithstanding their successive passage and their filtration through the two systems of the lungs and other organs." "It is evident that putrid liquids injected by the jugular circulate through the whole body, and are not arrested in the capillaries like mercury, fat, oil, viscid substances and powders, or any others too coarse."

Nevertheless, although the poison partly passes through, it produces obstruction in the capillaries; for in the dog, from which the poisonous blood had been drawn, petechial spots were found after death in the lungs and left ventricle of the heart, considerable ecchymoses in the cellular tissue around the thoracic aorta, in the mesenteric glands and gall-bladder, and something like inflammation of the mucous membrane of the intestines.

Again, Leuret, many years ago, produced the disease called *charbon* in healthy horses—

By placing under the skin of the neck blood taken from the heart after death of a horse with the disease.

By injecting into the jugular vein of a healthy horse some blood taken immediately after death from the right auricle of a horse with the disease.

And, lastly, by causing the blood to flow from the jugular vein of a living horse affected with charbon into the jugular vein of a healthy mare, by establishing a double communication between these vessels. In this experiment all the symptoms and effects of the disease were after a while established in the healthy animal, which died seven days after the operation.

It is well known that remarkable evidence to the same effect has been furnished by experiments on the cattle plague.

So the poison can be transmitted directly by the blood either of the dead or living animal; and thus, while the introduction of solid particles into the blood produces only local effects—arterial or capillary embolism and their consequences,—the introduction of putrid fluid poisons, and so spoils, the whole mass of the blood, of which the local lesions—capillary obstruction—appear as secondary effects.

It has been shown that the local effects of pyæmia may be produced by the passage into the blood of either solid particles or putrid fluids. But although it may be easily imagined that even solid particles, circulating with the blood and blocking up the vessels, may produce, under certain circumstances, considerable constitutional disturbance, yet there is no evidence that such severe symptoms as mark the advent and course of acute pyæmia could be produced by foreign particles that act mechanically only. These effects must be ascribed to the introduction of putrid fluids which poison the blood. Therefore while, as a rule, cases of simple embolism must be referred to the action of solid particles, the terrible disease known as pyæmia must be due to the action of some putrid fluid poisoning the blood.

Now, whenever such a fluid exists in contact with any surface capable of absorption, there is more or less risk of infection of the blood. Such a fluid is usually produced at the surface of wounds, whether the result of accident or operation, and is usually, of course, the decomposing liquor of pus—hence the assumed specific relation of pus to pyæmia. That some wounds are more likely to become the source of blood-poisoning than others can be readily understood. For instance, it has been observed that, comparatively speaking, pyæmia seldom supervenes upon superficial injuries during the process of healing, or after wounds resulting from simple operations, as removal of the breast or herniotomy. But although, unhappily, there is no form of wound, however superficial or simple, which has not, within the experience of most surgeons, proved the source of blood-poisoning, yet, as the rule, it may be affirmed that wounds are dangerous in this respect in proportion as the pus or other fluid they furnish is allowed to accumulate and to be retained until it becomes decomposed. Hence deep and depend-

ing wounds, which furnish foul discharges that cannot easily escape, are the wounds which are reasonably regarded with most apprehension, and the condition of which surgeons are most anxious to alter.

But pyæmia may, and too often does, occur independently of any external wound or exposed surface whatever, and I think the experience of surgeons will bear me out in stating that, under these circumstances, it is far more frequently seen following upon acute necrosis than upon any other malady. So often, indeed, are cases of acute necrosis of the shaft of the long bones in children terminated in this way that the probability of the event should always become a chief consideration in deciding upon the treatment of such cases. It has been remarked that acute diffused inflammation of the cellular tissue, as that of a limb, amongst the muscles and surrounding the bone, is a very frequent source of pyæmia; but the more I see the more I am convinced that the majority, at least, of such cases are essentially cases of acute necrosis of the bone, the surrounding mischief being secondary to or associated with this. But in such cases pus is almost always formed before death. And while it is generally admitted—as, indeed, these striking cases prove—that pyæmia may arise independently of any external wound or exposed surface, it is not commonly admitted, I believe, that pyæmia may occur without the presence of pus somewhere.

I have already endeavoured to account for the common association of pus and pyæmia without admitting any specific relation whatever between them as cause and effect.

Pyæmia then is the result of the contamination of the blood by the admixture of some putrid or decomposing fluid, the effects of which must vary according to—

The intensity of the poison.
The quantity introduced.
The rate of its absorption.

But if pyæmia be thus caused by the circulation of morbid matter with the blood, how comes it, considering the absorbing power of raw surfaces, and the frequency with which wounds are bathed in fetid fluids, that pyæmia is not even much more common than it is? Why, in the case of every putrid collection in contact with living parts, is there not infection? The apparent discrepancy between cause and effect, in this regard, disappears when the circumstances which affect absorption are taken into account. Since the time when the mingling of fluids through animal membranes was demonstrated much has been added to our knowledge of the subject. Especially have the conditions which influence the transmission of fluids been studied both in relation to the fluids themselves and the membranes through

which they pass. Absorption, or the transmission of fluids through membranes, no longer appears the simple process it was formerly supposed to be. Not only is it much modified according to the nature and surface of the tissue, but also by the character and composition of the fluid. It has been shown that the constituents of a fluid, apparently uniform, may be thus separated by a membrane through which one can and the other cannot pass; and that in this there is a means of analysis more subtle than the chemist can accomplish. Moreover, it is probable that absorption of poisonous matters, even when it does occur, may be sometimes so gradual as not to exceed the rate of elimination, and therefore not to accumulate in the blood to an extent sufficient to produce obvious results. The results, that is, which we recognise as pyæmia; but, as before suggested, the milder degrees of blood-poisoning are probably far more common than is generally imagined, because the slight and transient disturbances which they evoke are either otherwise accounted for or overlooked. When all this is considered in relation to the absorption of poisonous fluids, the objection just now alluded to loses all its weight. Unhappily, pyæmia is of no rare occurrence; but it would be far more frequent than it is if there were no difficulty in the way of absorption of putrid fluids from raw surfaces.

There can be no doubt that different persons are differently disposed to be affected by a poison mingling with the blood. Indeed, this fact has become familiar to us by repeated illustrations. For instance, how very few out of the many who receive dissection wounds suffer therefrom. There can be no question, I think, that here a poison is very often introduced without any appreciable effect upon the system—a poison which at times is potent to imperil or destroy life. That it is the same poison which in different individuals produces such different results is shown by the fact which has repeatedly occurred, that while two or three persons have been fairly inoculated from the same subject, yet only one has suffered. Again, after the poison has been introduced, it may be eliminated more freely in one than in another; and even while circulating it may tell with very varying effect upon the blood and tissues in different cases. Thus the predisposition to be affected by a putrid poison varies in different individuals, and the conditions which determine such difference may be in some measure guessed at.

Among the predisposing causes, then, of blood-poisoning may be suggested—

All causes which reduce the vital powers, such as previous disease. Our ideas on this subject are of necessity at present vague and obscure, but all that we know tends to assure us that, as the powers are reduced, less resistance is offered to

the influence of poisons of all kinds; and we can very easily imagine that when the forces by which the blood maintains uniformly its normal condition in spite of the countless disturbing influences to which it is exposed—that when these forces are enfeebled, it yields more easily to the destructive influence of an animal poison.

I think in these and other cases we are prone to confound the vital forces in general with mere muscular power, or what is commonly called bodily strength. But everyone is aware that it by no means follows because an individual is what is called strong that therefore he is healthy. The delicate will often resist or recover from morbid influences to which the robust will succumb. It is necessary to distinguish between health and strength.

Again, among such predisposing causes may, I think, be mentioned any cause which interferes with the due elimination of refuse matters, whereby there is an undue accumulation of substances in a state of retrograde metamorphosis in the blood. There is, I think, ample evidence to show that these substances especially are of unstable equilibrium and prone to change; and it is not unreasonable to believe that a decomposing substance introduced into the blood may give a different and abnormal direction to these matters, which, being already in a state of retrograde metamorphosis, are probably least able to resist its influence.

On this subject Gaspard has forcibly commented. He says: "In truth, it has been much doubted in recent times that putrefaction can commence in the economy during actual life. But those who have entertained these doubts have never observed with what promptitude our fluids and solids decompose when they cease to be renewed by proper food and drink, or when they are deteriorated by foreign substances. They have never paid attention to the odour, already putrid, of the breath of a man when he awakes after passing a single night in abstinence and repose; or of those who fast for religion; of those who endure hunger for several days; of those who become scorbutic from subsisting upon tainted provisions; of any one under the influence of mercury for syphilis; of a dog fed upon flesh, compared with one fed upon vegetable food, &c. They have never compared the odour of the urine of carnivorous and herbivorous animals," &c. He adds in a note: "In all these cases, it is by the breath that putrid degeneration is especially manifested, because the pulmonary transpiration is the great emunctory of the economy, as Magendie has shown by his experiments with camphor and phosphorus. One knows also that after an excess of spirituous drinks the breath acquires a vinous or alcoholic odour.

The blood is always receiving the products of the retrograde metamorphosis of the tissues—substances which are especially prone to change, and therefore most susceptible of external influence. Now, that these substances are carried through their changes and eliminated at different rates in different persons we can hardly doubt; and I have often fancied that the different susceptibility of different individuals to the action of animal poisons, as those of fevers, may be in some way connected with the amount to, and condition in, which these products are allowed to accumulate in the blood. Are they not, of all substances in the blood, the most likely to be the soil in which the poison germinates, or those upon which it can most readily operate?

There is a condition which has been termed the putrid diathesis, indicated by such symptoms as foul breath, soft, spongy, tumid, easily bleeding gums, &c.,—a condition which seems to be much favoured by a high external temperature.

Is it not a remarkable fact that damaged kidneys have, as the rule, much more influence upon the result of an operation or injury than a damaged heart, although the action of the kidneys is not so immediately necessary to life as that of the heart? Is not this because the kidneys are called upon to accomplish extra work in excretion and purification of the blood at a time when they are unequal to even the ordinary duties of their office?

Concerning the duration of pyæmia, Sédillot says: "The mean duration of pyæmia terminated by death has been from four to eight days, according to our observations." But he continues: "From another series of facts I have assigned a little longer time for the duration of this affection, and I have fixed the period of death between the eighth and twelfth day." Erichsen writes: "Death usually takes place about the tenth or twelfth day; though it may occur as early as the fourth, or the patient may linger on for six or seven weeks." Probably these statements are as accurate as any that could be furnished on the subject.

The prognosis in this affection is not encouraging. Of all diseases which the surgeon has to encounter, pyæmia is the most destructive and the worst. When it occurs, recovery is comparatively so rare, and it does occur so frequently, it is often so sudden and unexpected in its onset, often so insidious in its progress, and often kills so rapidly, that it is justly regarded by surgeons as the most mischievous of evils. It very often defies all efforts of prevention, and seems hardly ever to be influenced by any attempt to cure. Seldom giving any warning of its approach, it will at once convert a case, which just before seemed full of promise, into one past all hope of recovery; for it can-

not be denied that, with rare exceptions, to pronounce a patient the subject of pyæmia is to say that he is a doomed man.

The prognosis in pyæmia may be said to be unfavourable in proportion to the rapidity with which its effects are developed. In acute and well-marked pyæmia, one can hardly venture to admit a ray of hope. On the other hand, as a general rule, the longer the patient can struggle against the mischief the more hope is there of his being ultimately rescued from the perils through which he has to pass. In the more intense forms of this affection the duration of life can be measured only by days or hours. In the milder forms, as the patient survives week after week, hope gains ascendancy. Yet there are exceptions on either side. Sometimes—too often unhappily—even in the most chronic cases, the sufferer lingers on only to sink at last through extreme exhaustion.

[We know of no drug in the whole of the Materia Medica that can be in the least degree depended on to control, much less to cure pyæmia, and yet it is not too much to say that even from this terrible affection many lives have been rescued by careful and skilful management. The great question which is ever before us throughout the case concerns the support of the patient—the use of food and stimulants.]

With regard to stimulants judgment is required. They are almost invariably necessary throughout the case, and the extent to which, at any period, they should be given is one of the nicest questions which can be submitted to us. There is, in truth, scope here for the exercise of all the skill of the most accomplished surgeon, and it must be confessed that it is a matter in which his judgment often appears to considerable disadvantage in comparison with that of a good nurse. When food cannot be taken we are obliged to fall back upon stimulants, and as weakness increases we are often compelled to support life by stimulants alone ; but I think, as a rule, it may be said that we should be more jealous in the use of them. They are such potent agents, and so valuable, that we should not be careless of their profuse expenditure. If we are lavish of them at first, they may the sooner fail us afterwards, when life more immediately hangs upon the effects they produce. But again: it is necessary to observe that in these urgent cases we must not be hypercritical of the presumed contraindications to their use. While we are discussing whether the state of the skin or the temperature of the surface will admit of their administration or increase, the patient may die. In such cases I confess to be guided rather by the general condition than by this or that particular symptom.

Of all stimulants brandy is the best. Other stimulants will

often prove useful in particular cases, or because of some other mode of action, especially carbonate of ammonia; but as strong stimulants least likely to disagree, the pure spirits, and, above all, brandy, are the best. As the patient recovers, and the active symptoms subside, wine is better borne, and will often replace brandy, either partly or wholly, with advantage. Of wines, good champagne, iced, is often most grateful, even from the commencement, especially when the stomach is irritable. Brandy and iced champagne, either alternately or mixed together, will often remain on the stomach, and prove agreeable when everything else is rejected.

When there is much sickness or irritability of the stomach, with a parched mouth and fever, as a rule, nothing will be so refreshing to the patient as pieces of ice allowed to dissolve in the mouth. It is almost the only thing I have heard eagerly asked for during the progress of the affection.

If we do not neglect these grand indications, I can see no objection to the employment of particular drugs, which may reasonably be supposed to possess a suitable action, provided always they do not disagree. We have evidence for the belief that we have to contend against the operation of a morbid poison, of a putrid fluid in the blood. Now we may conceive that its mischievous effects may be averted, either by its elimination, by an arrest of the changes it provokes, or by destroying its deleterious properties by rapid oxidation.

Its elimination through the various excretions seems to me the most natural method. It is the one most obviously adopted by nature, and which, as already said, we may fairly attempt to assist by the use of those drugs which encourage the secretions.

Gaspard observes that the liver appears to serve as the chief emunctory of the body. He points out how often, in the natural cure of certain affections, there occur spontaneous and abundant evacuations, which are critical, of evidently altered bile. He alludes to the frequent connexion which has been pointed out between putrid and bilious affections; and he says, and appeals to his own experience in support of the fact, that the poison of vipers and of other serpents, when introduced into the blood, disturbs, in the first instance, the liver, and augments enormously its secretion. Then, he says, after removal of the kidneys, in the experiments of Comhaire and of Prevost and Dumas, when urea and other principles of the urine, more or less putrid, accumulate in the blood, the biliary secretion is much increased; and in many of his experiments he has seen putrid substances injected into the veins act certainly upon the liver and the bile. These and other facts which he brings forward all concur to prove, he says, "that bilious affections are the first degree of putrid affections."

Those agents which arrest the decomposition of animal matters are termed antiseptics, and there are many substances which are very efficient in this respect. It is well known that flesh and blood, and animal matters of all kinds, may be preserved in these for an indefinite period without becoming putrid or evincing any signs of decomposition. No wonder, then, that these agents have been largely employed in the treatment of a disease which is supposed to depend upon the presence of a putrid fluid in the blood. But, unfortunately, evidence is wanting to show that effects which are produced in the laboratory are produced in the blood as it circulates during life, or that preservatives of dead flesh are necessarily preservatives of living tissues. That we can prevent the decomposition of blood in a bottle, or destroy its putridity, by mixing it with an antiseptic, affords nothing like proof that the same substance, if mingling with the blood as it circulates, will arrest the changes which a putrid fluid may set up. Still their employment cannot be said to be altogether unreasonable, and if future experience should show that they sometimes prove useful, we have, I think, a better clue to their mode of action than to that of many other drugs which justly claim a large share of our confidence.

Amongst drugs which are believed to act in this way the claims of sulphurous acid have been strongly urged by Dr. Polli. He has come to the conclusion that not only it alone, but also its combinations with earths and alkalies, such as the sulphites of soda, potassa, magnesia, and lime—which can be borne in large doses—possess in a supreme degree the power of arresting all known organic fermentations and putrefactive metamorphoses of animal solids and liquids, and that its action is such that it never proves a poison to the living organism, as do many other substances well known for their antiseptic properties, but which, on account of their poisonous effects, cannot be employed with safety.

In a very interesting and instructive Report on the Surgery of the late War in America, which has been just issued from the Surgeon-General's office, it is stated of pyæmia: "It has been one of the great sources of mortality after amputations, and its victims are to be counted by thousands. . . Several valuable papers have been contributed on the pathology of this affection, and a number of statistical reports on its treatment. The conclusions of the latter are adverse to the therapeutical utility of the sulphites and hyposulphites in this disease.

There remains the fact that the mischievous properties of putrid substances may be destroyed by rapid oxidation. It has been clearly shown, for instance, that the efficacy of charcoal in counteracting putridity is not due to any power of arresting

change, but to its power of promoting oxidation. Now, amongst agents of this class, the alkalies occupy a conspicuous place. Liebig says—and in justice to the argument I cannot venture to omit any portion of the following extract — "A number of organic compounds acquire, by contact with or in presence of a free alkali, the power of combining with oxygen (of burning), which, alone, they do not at all possess at the ordinary temperature of the air, or at the temperature of the body (Chevreul). The influence of alkalies in this way is most strikingly seen in such substances as are coloured, and become decolorised under these circumstances, or in such as are colourless, and become coloured as they are destroyed. Carmine, the most durable organic colouring matter known to us, the colouring matters of logwood and Brazil wood, and *the colouring matter of the blood*, dissolve in solution of potash, and may be preserved for months unchanged; but as soon as air or oxygen is admitted to these solutions oxygen is rapidly absorbed, and these colouring matters are destroyed (Chevreul).

"The colourless solution of pyrogallic acid, or that of gallic acid, when mixed with excess of alkali, becomes, when oxygen is admitted, dark red, and is destroyed in a few minutes. Even alcohol is oxidised when it contains free alkali and is exposed to air at the ordinary temperature, and becomes brown.

"Milk sugar and grape sugar, in presence of a free alkali, and with the aid of a gentle heat, deprive even metallic oxides of their oxygen."

And, what is more important, there is good evidence to show that this action proceeds in the blood. Liebig continues :—

"The alkalies exert a precisely similar action in the blood; they promote and increase the combustibility of the respiratory matters.

"This influence of the alkalies is shown in a decisive manner in the effects produced on the salts of organic acid in the circulation. It has long been observed that after eating juicy fruits, cherries, strawberries, apples, &c., the urine becomes alkaline. All these fruits, as well as the juices of edible roots, tubers, and green vegetables, contain these alkalies in the form of salts of the organic acids; usually as malates (all kernel fruits, pine apples), citrates (stone fruits, currants, potatoes), tartrates (grapes). It has been shown by Gilbert Blane and by Wöhler that the pure salts, malates, citrates, tartrates, &c., of the alkalies, when taken internally behave exactly as the salts in the juices of these fruits and roots. Citrate, tartrate, malate, and acetate of potash, whether given by the mouth or in enemata, appear in the urine in the form of carbonate of potash.

"The acids of these salts, introduced into the blood in the

form of neutral or acid salts, are there burned (oxidised) as effectually as in the most perfect apparatus of combustion. The alkaline carbonates which predominate in the urine of herbivorous animals are derived from the same source—namely, from the salts composed of the alkalies with the organic acids contained in the fodder.

"In precisely the same way is uric acid destroyed or burnt in the organism in presence of free alkali. In the urine of rabbits to which had been given proportionally large doses of uric acid, in the form of urate of potash (2 to 2½ grammes—30 to 40 grains), no uric acid could be detected. It had been converted into oxalic acid and urea, the amount of which last in the urine exceeded the normal quantity at least five-fold (Frerichs). But, as is well known, urea corresponds in composition to carbonic acid. It is carbonic acid in which half of the oxygen is represented and replaced by its equivalent of amide (NH_2).

"The causes of the so greatly increased combustibility of all these bodies is evidently—as is proved by the most obvious considerations—the alkaline quality of the blood.

"The herbivora consume in their fodder a quantity of vegetable acids in the free or uncombined state, which, like the portion combined with alkaline bases, are destroyed, and disappear in the circulation (the blood being always alkaline, so that these free acids are also converted into alkaline salts). It can hardly be doubted that, in the organism of the herbivora, exactly as in that of the carnivora, uric acid must be formed as an imperfect or intermediate product of the combustion of the plastic matters consumed in the change of matter; but in the normal, healthy state, this uric acid never appears in their urine, rich as it is in free alkali.

"This fact is satisfactorily explained by the presence of alkaline carbonates in their blood.

"The vegetable acids, when they enter the blood, or the uric acid formed in the body, decompose the alkaline carbonates in the blood, and form neutral salts, which are destroyed as fast as they are formed by the oxygen present in the blood. The carbonic acid, thus set free, is given off by the lungs.

"The same organic acids which, in the form of salts—that is, *accompanied by alkaline bases*, disappear so rapidly even in the blood of man, appear in great part unchanged in the urine when they are taken *without these alkalies*. Even the most combustible of them, such as tartaric and gallic acids, become, in these circumstances, incombustible in the blood of man. Gallic acid is particularly easy to be recognised in the urine by its property of striking an inky black with the salts of sesquioxide of iron.

"The cause of this incumbustibility is the want of the *free alkali which determines and promotes the action of the oxygen.*"

Dr. Bence Jones says: "Alkalies assist in the oxidation of organic substances, not by giving oxygen, but by promoting the formation of vegetable and animal acids, and ultimately forming carbonates out of the burning matter. Familiar instances are the saponification of fats, the use of caustic potash in Trommer's test for sugar, the use of lime in Moore's test, the use of potash in Liebig's method of determining the amount of oxygen gas by pyrogallic acid.

"Hence caustic alkalies, potass, soda, magnesia, are more efficacious as oxidisers than carbonates, and carbonates more potent than bicarbonates. But even bicarbonates, when heated with organic substances, lead to the formation of organic acids, which displace the carbonic acid, and thus promote the oxidising action."

Now the employment of the alkalies in the treatment of blood-poisoning is not only thus rendered most reasonable, but experience seems to bear testimony in their favour. It behoves us to draw conclusions—nay, even to receive impressions, with all caution concerning the efficacy of any plan of treatment; but I have been led to believe that in some cases the employment of the alkaline salts, such as the bicarbonate of potassa, has proved of service: nor do I think that I am alone in this opinion. I cannot speak so confidently of their value in acute pyæmia, where the progress of the affection is so fearfully rapid; but in the slower and milder forms of the disease they are often evidently beneficial. I am sure I have frequently seen the condition of a patient improve during their use. Moreover, there is the testimony of others in their favour. Of their beneficial action in many affections which seem to depend upon the milder action of some poisonous organic matters in the blood I cannot entertain a doubt, any more than of their local action in the case of poisoned wounds, as those of the wasp and viper.

I have previously alluded to the idea that the products of the retrograde metamorphosis of the tissues, which the blood is constantly receiving, may be, from their very nature, the matters upon which the poison can most readily operate. Be this as it may, these substances should be completely changed and freely eliminated. In a state of perfect health they are fully and freely oxidised. And in some instances, when this action is impeded or arrested, we can in some measure appreciate the result, as, for example, in what is called the uric-acid diathesis.

Now, I think it has been shown that alkalies promote these changes, and in this way, apart from whatever direct action they may exercise upon the poison itself, they may assist us in our management of pyæmia.

It may be said that all this is simple speculation. Granted to

a great extent for some portion of the argument. But is it unreasonable? And if not, do not alkalies, under the circumstances, deserve a fair trial?

Their employment is not likely to do mischief. When given for some time they are believed to depress. I venture to think their action in this respect has been exaggerated. Perhaps it is more true of the simple alkalies, as liquor potassæ, than of their bicarbonates. For this reason I have usually chosen the bicarbonate of potassa, often combining it with the carbonate of ammonia. For the greater power which the simple alkali may possess over the carbonate as an oxidiser, is, I think, more than outweighed by the larger doses, which are better borne, of the latter.

With the same sort of view many drugs have been given rich in oxygen under the idea that they may furnish this element to the blood. But it need hardly be said that this idea, which has arisen out of a misconception, is for the most part purely visionary. In the first place, it has not been shown that these compounds yield free oxygen by decomposition in the blood, and even if they were so decomposed the amount of oxygen they could furnish would be trifling in comparison to that always taken in by respiration; while any extraordinary influence which it could exercise by virtue of its peculiar condition is a matter of mere speculation.

When the more active effects of the poison have passed away, and the patient is left in an exhausted state, iron will often prove a very valuable remedy. It seems to be especially required in this condition of anæmia and debility, in which, perhaps, traces of the poison still linger in the system. It promotes the formation of blood-cells, and thus becomes indirectly an oxidiser by its power of drawing oxygen into the blood. There is a large choice of various salts of iron, and some of these may often, with advantage, be given with an alkali.

Both in hospital and private practice cases of pyæmia still from time to time occur in spite of every precaution. Yet there can be no doubt that they are least frequent when all reasonable means of prevention are most rigidly enforced. But every now and then cases of pyæmia multiply in wards with remarkable rapidity, and such sudden increase has been often observed after an unusually large number of operations has been treated in the same ward. When a ward is what the sisters and nurses call "heavy"—that is, when there is an extraordinary number of severe cases of injury or operation, then the chances of an outbreak of pyæmia are unquestionably multiplied. It is not difficult to find a cause for this. The atmosphere must be, under such circumstances, unduly loaded with decomposing organic matter—the very material of all others which, coming in contact

with wounds, is likely to excite changes in them whereby their discharges become putrid. We are all assured of the terrible effects of inoculating the wounds of one patient with the discharges from another—as by the use of sponges in common. But the same mischief may be brought about, although perhaps not quite so strikingly, through the atmosphere. These are facts of the first importance. It is, perhaps, impracticable to prescribe any precise limit to the number of cases which may be fairly treated within a given space ; but it may be safely affirmed that the fewer the better.

How are wounds and local injuries to be best managed to guard against infection of the blood ? No local advantage, however great, of any measure ought for one moment to be set against the risk of pyæmia. If by any plan in the management of a wound we could avert the risk of pyæmia, though nothing else could be urged in its favour, and in every respect besides it were inferior to others, it ought for that reason alone to supersede them all. For delay and suffering and unseemly scars weigh very little indeed against the probable consequences of blood-poisoning. But, happily, such unpleasant alternatives are not often pressed on us. So long as there is a wound, there is risk of contamination. The more quickly a wound is healed, the more quickly is a patient delivered from the perils of pyæmia. And, moreover, the more favourably—that is, almost always, the more rapidly—a wound is healing, the less likely is it to become the source of infection. Again, exposure to air hastens decomposition. Therefore we do best when we get a wound to unite by the first intention. But in order to accomplish this, wounds for the most part must be accurately closed ; and, should the attempt fail—as, indeed, it too often does,—then the discharge will accumulate, and, soon becoming foul, a fertile source of blood-poisoning is engendered. In rash attempts to procure union by the first intention, more especially if care be not taken to prevent the occurrence of a cavity or space beneath, fluids may be locked up and become putrid. When contact of the edges of a wound at the surface only is maintained, while there is room for the accumulation of blood or pus or other fluid beneath, the surgeon is fulfilling the very conditions under which blood-poisoning is most likely to be effected. This is of all others the plan which would be suggested to anyone who wished to procure the absorption of morbid matter. So that the dread of this, and despair of attaining, in the majority of cases, union by the first intention, has led some surgeons to adopt an opposite plan of treatment—the plan of leaving wounds from the first open and uncovered, and so arranged that all discharge shall escape most freely. But this, unfortunately, involves other risks of its own : prolonged and

greatly increased risk from exposure, so that it can bear no comparison for safety with primary union. Yet this is preferable to allowing discharges to accumulate in closed wounds. It comes, therefore, to this: that it is idle to propose the universal adoption of any one single plan. The judgment of the surgeon must be exercised in every case; and the great question before him is this: are the chances of procuring union by the first intention sufficient to warrant the attempt? If so, it should be made; but then the wound should be most carefully watched, and, when evidence of the accumulation of any discharge can be detected, means should be forthwith adopted to ensure its free escape. It may not be necessary to open the entire wound in order to accomplish this. We may often after all compromise the matter, and get a large part of the wound at once to adhere, while the rest of it afterwards closes by granulation. In the endeavour to procure union by the first intention, I think the great risk is run when the accumulation of discharge behind united edges at the surface is overlooked. When there is any doubt, some small portion of the wound may be gently separated; and the best way of avoiding it is, when dressing the wound, to apply gentle and equable pressure in such a way as to ensure, as far as possible, complete apposition of the deepest parts. Too often attention is directed only to the surface and mere edges. So far as it can be arranged, the pressure should rather be diminished from within outwards. If this point were more carefully attended to, I cannot help thinking that union by the first intention throughout would not be so rare as it is. —*Lancet, Jan.* 19 *and* 26, *Feb.* 2 *and* 16, 1867, *pp.* 75, 109, 139, 201.

11.—ON SCROFULOUS DISEASES OF THE EXTERNAL LYMPHATIC GLANDS, AND THEIR TREATMENT BY IODINE AND OTHER LOCAL STIMULANTS.

By Dr. Thomas Balman.

[The local treatment of scrofulous diseases of the external glands has not been much dwelt upon by authors of works even specially devoted to the subject of scrofulous diseases. The importance of the subject in practice cannot be overestimated.]

From neglect, feeble health, or other causes, such swellings may assume a subacute condition; and, in place of subsiding, may go on slowly, and perhaps imperceptibly, increasing both in size and consistence, or they may manifest this peculiarity from the first. They then constitute the great majority of those cases of strumous glands which are so frequently presented to our notice in the out-patients' wards of our numerous charitable institutions. In a case of this kind I usually proceed thus:—

If the swelling is recent I begin with iodine lotion, or this may be replaced by the diluted tincture of the Pharmacopœia—one part to three of water. Pledgets of lint, soaked in either of these lotions, are to be continuously applied to the tumour; and, in order to retain the moisture, they should be covered with a piece of gutta percha sheeting or oiled silk. If the tumour be of longer duration, firm to the touch, or has implicated the surrounding textures, I pencil the surface lightly two or three times with the solid nitrate of siver, or with a solution of iodine. The former is the least irritating to the skin, and is, therefore, in many cases, the best to start with. This application is repeated at intervals of five or six days. All bandages, woollen wrappers, and other such articles of dress with which the patient is usually smothered, are removed, and the parts freely exposed; and, if within a convenient distance of the sea-coast, the tumour may be also advantageously bathed with sea-water every morning.

This procedure will produce in all probability one of two results; either a gradual diminution in the size of the swelling, or suppuration. In the event of the latter happening, the abscess should be opened at once—of course in the most dependent and favourable position. The parts surrounding the incision are then to be immediately painted circumferentially with the iodine solution. The application should extend as far as the limits of the tumour. The effect of this treatment is to cause the rapid collapse and effectual emptying of the sac of the abscess, and within a very short period probably, adhesion and closure of its cavity. The punctured wound which may be covered with a piece of tow or charpie, very often heals without the slightest disfigurement, and we are enabled, if necessary, to continue our applications. Abscesses which, if allowed to ulcerate, would continue many weeks, and perhaps months, may by this treatment be sometimes obliterated in a few days.

Injections of iodine, zinc, and other astringent lotions, as proposed and extolled by Lugol, Tyler Smith, and others, have never succeeded, in my hands, in producing any corresponding results. And the almost universal practice of poulticing in order to accelerate the formation and discharge of matter has long appeared to me still more objectionable; and I confess that I was some time ago surprised to find such an accomplished pathologist and excellent surgeon as Mr. Paget recommending this antiquated and, I truly believe, mischievous practice in the treatment of these complaints. (See "Notes of Practice," &c., Med. Times and Gaz., Jan. 1858.) However useful poultices and moist applications generally may be in acute phlegmonous inflammation of the lymphatic glands, in deep-seated or painful abscesses, or in a variety of other cases which it is

scarcely necessary to name, I am satisfied that when continued for any length of time in strumous, suppurating, and other sores, whether involving the absorbent glands or other textures of the body, poultices tend to relax tissue, impair the tonicity of the capillary blood-vessels, sustain the discharge, and facilitate the spread of the suppurative process, and not unfrequently lay the foundation of sinuses and of those horrible bridge-like marks which so often disfigure the victims of this disease.

The benefit of local stimulation by iodine is not simply limited to scrofulous abscesses. During the last two years I have been in the habit, both at the Dispensary for Diseases of the Skin and in my own private practice, of using it freely in a variety of other cases: in chronic affections of the joints, inflamed breasts, boils, carbuncles, old cicatrices, œdema, and in the slighter forms of erysipelatous inflammation of the skin. In carbuncle the effect is sometimes most striking: the pain and irritation are almost immediately relieved, and the slough is rapidly thrown off. Ganglions, when situated about the wrist, may be got rid of by the same means. They should be first punctured with a fine needle, and a slight amount of pressure continued for a few weeks afterwards.

I at first thought that the local use of iodine in the way described was novel; but I have recently discovered that Mr. Davies, in a work written five-and-twenty years ago, has recommended the external application of the simple tincture in some of the cases I have mentioned. His book, which I regard as a very valuable contribution to medical literature, should be read by all who are desirous of knowing the full therapeutic influence of this important remedy. A series of cases was afterwards published in the Lancet, by Dr. Langon, in support of Mr. Davies's views, and are well worth perusal.

A question of some importance will here naturally present itself. How, it will be asked, does local stimulation, either by iodine or nitrate of silver, subdue inflammatory action, lessen the swelling, pain, and irritation, and accelerate the cure, in such cases? The pathology of inflammation, as revealed by the microscope, explains in some measure, I think, how it does so. The phenomena of inflammation we know to consist primarily and essentially of enlargement or dilatation of the blood vessels and capillaries of the part affected; accumulation, crowding together, and final arrest of the blood-corpuscles, and their subsequent adhesion, both to themselves and to the coats of the vessels; effusion of the liquor sanguinis into the cellular and adjacent structures, causing the swelling, œdema, heat, pain, and redness which are known to characterise inflamed textures. We have to deal, then, with impeded action, diminished contractile power in the coats of the capillary blood-vessels,

and consequent inability of the arteries to grasp and push forward that vital stream upon the healthy and continuous movement of which the whole fabric is sustained. Iodine and nitrate of silver, so much extolled by Mr. Higginbottom, and perhaps any other local stimulant, seems to restore this impaired vital contractility of the blood-vessels, hurries on these struggling and pent-up globules to complete their labyrinthine journey in the general torrent of the circulation. The local stimulating action of these substances must further tend to quicken the action of the absorbents, and thus materially assist in the removal of the effused products.—*Lancet, April* 13, 1867, *p.* 456.

DISEASES OF THE NERVOUS SYSTEM.

12.—TWO CASES OF TRAUMATIC TETANUS SUCCESSFULLY TREATED WITH THE ORDEAL BEAN OF CALABAR.

By Dr. Eben. Watson, M.A., Lecturer on Physiology in Anderson's University, Glasgow.

[The use of Calabar bean in the treatment of tetanus occurred to several on its properties being made known. Amongst others to the late Prof. Miller, of Edinburgh ("System of Surgery," p. 515), but the suggestions hitherto have never been carried out. The following cases are therefore interesting, as being the first in which the experiment has been carried out.]

Case 1.—Annie W., aged 11 years, admitted to the Royal Infirmary on the 12th of November, 1866. About three weeks ago the patient struck her right foot against a stone and bruised and cut it slightly at the side of the nail of the great toe. No attention was paid to it at the time. She has at present the aspect and expression of one who has trismus, and she opens her mouth with difficulty. For this "lock-jaw," which commenced six days ago, she has been sent to the hospital.

She remained in this state, and no violent spasms came on till the evening, when opisthotonos occurred in a very severe form, the body being bent into an arch of nearly three-quarters of a circle. She was so rigid in this state that my resident assistant, Dr. Forsyth, administered chloroform by inhalation, which relieved her for the time, but whenever she came out of the anæsthetic state the spasms were renewed as violently as ever; so much so, indeed, that she was again put under its influence with the same temporary good effect. While under the chloroform the outer half of the toe-nail was cut away from the still inflamed and ecchymosed matrix, and a poultice was applied.

Nov. 13th. This morning I found her as described. Her jaws were firmly locked. and her body and limbs perfectly rigid. The tendency to opisthotonos was at once induced by the patient's attempting to drink cold water, and also by touching any part of her. Indeed, even though undisturbed, the spasms were very frequent, and always tended in the direction of opisthotonos; hence the poor child found her only comfort in lying on her belly, with her head and shoulders over the edge of the bed; and at this time she required continual attention to prevent her falling out of bed, and as the spasms were coming on, her cries for help were most distressing. I prescribed a dose of calomel and jalap at once, and during the day, every two hours, fifteen drops of the tincture of cannabis indica, a drug which certainly soothes in tetanus more safely than any other.

14th. Patient's bowels have not been moved by the calomel and jalap. She continues in the same state as yesterday, but in the evening the spasms became much more severe. She was ordered half an ounce of castor oil with a drop of croton oil mixed with it.

15th. Bowels acted freely yesterday; stools quite black. She has taken the Indian hemp very irregularly, sometimes spitting it out.

Every evening there is a considerable aggravation of the spasms, and this seems to be more and more marked each successive evening.

I now determined to try the Calabar bean, and in the emergency the only preparation of it which could be got was that used in ophthalmic practice for contracting the pupil. I may here mention, for the sake of those who may not have had their attention called to this subject, that the action of the Calabar bean in sufficient doses is to paralyse the voluntary muscles, the very muscles which are spasmodically contracted in tetanus. Hence the prospect of counteracting the influence of the disease by that of the poison. I may also state that the action of Calabar bean in contracting, and that of belladonna in dilating, the pupil cannot at present be satisfactorily explained. We can only assume that in the former case the radiating fibres of the iris are paralysed, and in the latter the circular; but whether this is due, as Valentin has supposed, to the special distribution of the cerebral and sympathetic nerves to these different sets of fibres in the iris, and to a special action of the two substances upon them, it is not easy to determine. On this point I may hereafter enlarge a little; but in the meantime I return to the narrative of my case.

At half-past two p.m. of the 15th November, one square of Squire's gelatine paper, containing the extract of Calabar bean, was put on the patient's tongue through the space left by a

missing tooth. Shortly after getting it she felt easier, was more cheerful, and kicked up her heels as she lay in bed on her abdomen, to show the power she had over them. At three p.m. she got two other squares, at seven p.m. three squares, and at ten p.m. two more. No severe spasms occurred during this evening; she had only a few short starts, but she was always very rigid in both body and limbs, and the opisthotonos and trismus were quite marked. She was more cheerful, however, and spoke more distinctly. Pupils rather contracted. She was to have two squares of Calabar paper every hour during the night.

16th. This morning I found her quite rigid, and with frequent and severe spasms. In fact, I thought either that the papers were not sufficiently strong, or that they were losing their influence on the patient. I now therefore ordered the following preparation: Extract of Calabar bean, twelve grains; white wine, one ounce. This made a muddy sort of wine of the Calabar bean, every five drops of which contained about one-eighth of a grain of the extract. Such a dose was to be given every half hour, the effects being carefully watched by my assistant. It will be noticed that the doses were given very close together, for we had already learned that their effects were very short lived. These doses were regularly given till seven p.m., by which time she had taken eighty drops or two grains of the extract. Only momentary twitches had occurred, and these principally when spoken to. At half-past seven P.M. she was in a semi-comatose condition, lying on her back, with no arching, mouth open, pupils pretty well contracted, breathing quiet and regular, pulse rather hurried and full.

In this state of things the Calabar bean was intermitted for two hours and a half—*i.e.*, till half-past nine p.m., by which time the pupils had again dilated, and transitory spasms were induced by touching or rousing patient with questions. Nine drops of the wine were then given, and five drops thereafter every hour during the night.

18th. She continues better, breathes more easily, and swallows better; pulse 84, of good strength; pupils natural. Increase the dose of the wine to ten drops every hour.

19th. Notwithstanding this increase, the patient had three severe fits of opisthotonos early in the morning, and she remained very rigid and the spasms easily excitable till my visit. I now determined to use a stronger dose of the extract, and thus endeavour to conquer the disease. For this purpose I ordered the following pills:—Extract of Calabar bean, twelve grains; ginger powder of sufficient quantity to make twenty-four pills; one to be taken every hour. By mistake the apothecary made these pills of twice the strength ordered—viz.,

containing each one grain instead of half a grain of the extract. This was not, however, discovered till the evening, so that the patient took one grain of the extract every hour for eight hours without any particular effect being produced. But half an hour after the ninth had been swallowed, the patient fell into the following state:—Her eyes were widely opened, staring and glassy; the pupils were contracted to pin-points; the pulse was rapid and intermitting; there was a mucous rattle in the throat, and the breathing was jerky and fitful. Patient did not answer questions, and gave no sign of sensibility. She had no spasms, neither could they be induced. In fact, all the muscles were completely relaxed, except those of the back, which were still rigid. She either could not or would not move any of her limbs, or make voluntary efforts to swallow. Some brandy-and-water and seven drops of the tincture of belladonna were poured down her throat, she not resisting, and this was repeated in five minutes. No effect was produced on the pupils, but the expression became less death-like. Patient was turned over on her side, for she had lain on her back hitherto, and then she got quit of some reddish-coloured, apparently bloody mucus from the throat by both mouth and nose. The breathing was thus rendered easier, but it was at first very hurried and panting. Gradually it became fuller and slower, and the pulse likewise became slower and more regular. The pupils soon dilated, but the extremities remained quite flaccid during the greater part of the night. As soon as the breathing was partially restored, she seemed to be quite sensible, but averse or unable to move. Towards morning the spasms, though less violent, could be easily induced; and next morning, at half-past eight, I found no traces remaining of the very remarkable state in which she had been on the previous evening. She was, however, flushed and perspiring; the pupils were quite natural, but the pulse was quicker than formerly; it numbered 108 in the minute, but was soft and regular. She expressed herself as better. She had no giddiness or any other disagreeable feeling attributable to the Calabar bean, and she was perfectly correct in her mind.

I remarked that the arms, though still unnaturally stiff, were more under the control of the will than they had been. She could move them a little, and she could separate her teeth just enough to get the edge of a spoon between them. She could also swallow better, and she lay much more quietly, and now generally on her side, in bed.

I considered it prudent to cease giving the bean to this patient for a time, and allow her to rally quite thoroughly from its effects. I therefore stopped it, and once more ordered the tincture of cannabis indica, with appropriate food and stimulants. Under this treatment she improved in strength, but not

much in respect of the tetanus. Her spasms certainly never were so strong as formerly, but they were very easily produced, showing that the disease was still unconquered. Besides, the body and legs became again quite stiff, so that if one could have raised her by the foot, he could have held her straight out in any position. At the same time the face had rather a more natural expression, and she could separate the teeth about half an inch. Her power over the arms was also greater, and she could even move the head a little to one side.

Such was her state at the end of the ten days during which she had no Calabar bean. It seemed to me that the tetanus had received a decided check from the large dose of the bean taken on the 24th of November, and that it had never since assumed its former severity. Still there had been little further progress made towards a cure since the bean was stopped. I therefore recommended it in the form of tincture, made after the receipt of Dr. Fraser (Edin. Med. Journal, vol. ix, p. 124), who considers five minims to be equal to three grains of the kernel.

Dec. 6th. I ordered the patient to have a dose of five minims of the above tincture every two hours, stopping the cannabis indica.

10th. Last night without any aperient medicine having been given to her, patient had five large watery evacuations from the bowels. This was the more remarkable because she had previously required a strong dose of castor oil, often fortified with croton oil, to move the bowels, and except from the effect of such medicine, they had always remained confined, I have little doubt, therefore, that this was another of the physiological actions of the bean—viz., catharsis.

It was noticed likewise to-day that her muscles generally were much more relaxed. The expression of the face was much more natural; she could laugh and open the mouth wider than she had yet done, and she could chew her food well. Her head and limbs, both superior and inferior, were likewise capable of being moved a little; but her back and abdomen still remained rigid, and the spasms, though very slight, were easily reproduced. The tincture was continued in the same dose, but only every six hours.

After this date her recovery was very rapid, and I find it noted in the journal on the 22nd December that for some days previously the patient had been quite well, and running about the ward. No trace remained of her formidable illness, and from the above-mentioned day she took no more of the bean.

On the 4th of January, 1867, she was sent to the Convalescent Home at Bothwell.

[The second case was a boy thirteen years of age; he received an injury of a finger whereby the nail was lost and the flesh slightly torn. The wound healed in a week; but slight tetanic symptoms appeared and were well marked at the time of his admission to the Glasgow Royal Infirmary three weeks after the injury. The case was successfully treated with Calabar bean.]

The effects of the bean were very remarkable, being chiefly seen in relaxation of most of the tetanically contracted muscles; indeed, in all of them but the muscles of the back, until far on in the treatment. *Then*, last of all, these gave way, but slowly, and as it were, reluctantly. This was well seen in the boy's case, for his back was stiff for some days after he was able to be out of bed. The effect on the eye, too, was curious. Remembering the speedy and great contraction of the pupil which the bean produces when applied locally to the eye, one could not but be surprised at the slightness of its action on the pupil when given internally. Except when a very large dose was taken, as in the girl's case, the pupil was never contracted to a point. On the contrary, the contraction was very slight and very short-lived under the action of ordinary doses of the drug; and one of the earliest symptoms of tolerance of it shown by the patient was the cessation of even this temporary effect upon the pupil—a tolerance which had to be met by an increase of the doses. Besides, I noticed that after the effect of the bean had passed away the pupil was found to be unnaturally dilated, as if from a sort of reaction of the fibres in an opposite direction.

As to the doses of the bean given in these cases, I must remark that those given in the girl's case were large—too large on that memorable day, the 24th of November, 1866. I have already explained how twice as much of the extract was given on that occasion as I had ordered; but I am certain that, though it brought the patient into danger, this large dose checked the disease, which abated from that day. It also affords us now an admirable proof of the power of the bean over this terrible disease, and of the great good to be expected from its more moderate and safe administration. It should be remembered, too, that in tetanus the patient seems to have a wonderful tolerance of many drugs, and that, therefore, larger doses of them than usual may be safely given, and, in fact, are required by such patients before the physiological effects of the medicines are developed. This is well known to be true of opium, cannabis indica, quinine, stimulants, &c. Now, I think that the Calabar bean is, in like manner, better borne in this disease than it would be in any other. It was taken and required all along, by the girl especially, in much larger doses than I should prescribe in ordinary circumstances. The rule which I should

give to others, and the one on which I mean to act myself, it to begin with a small dose, and rather to diminish the intervals than to increase the strength of the dose, till we become better acquainted with this powerful agent. Yet, after all, this is one of those drugs which can only be rightly given in cases constantly under good watching; for its physiological action must be produced else no good result can be expected from it, and to do so a *sufficient* dose must be given. I know of no general rule that can apply in such a case, but the one of beginning with small doses and increasing them cautiously as effects are or are not produced adequate to counteract the violence of the disease under treatment. I shall only add, in conclusion, that I greatly prefer the fluid form of administering the bean, as giving less probability of its accumulating in the stomach, which might occur if it were given in the solid form—as, for example, in pills repeated very frequently. The tincture, if well made as directed by Dr. Fraser, is certainly the best and safest form in which it can be administered; and five minims of such a tincture is quite a safe dose to commence with in the case of persons above ten or twelve years of age, as far as my experience goes.—*Lancet, March* 27, 1867, *p.* 265.

13.—IDIOPATHIC TETANUS—TREATMENT BY TOBACCO AND NICOTINE.

Under the care of Dr. Lyons, at the Richmond, Whitworth, and Hardwicke Hospitals, Dublin.

[The patient, a child ten years of age, had all the usual symptoms of well marked tetanus. He had pneumonia of the left lung. His previous history could not be found out, but there was no external wound or injury of any kind.]

That evening, by direction of Dr. Lyons, an enema was given of tobacco ℥i. to ℥xx. of water, ℥v. of which were injected; the effects were very marked, for after a few minutes he became quite unconscious, and all the muscles were relaxed; this state did not last longer than a quarter of an hour, when the tetanic symptoms recurred, but with less urgency than before.

October 29th. Had a great number of attacks during the night; slept none; suffered from flatulence, which was greatly relieved by enemata of turpentine, which brought away a quantity of hardened fæces.

An enema of tobacco was given in the evening, not so large as the former one; the effects it produced were not so marked.

Enemata of turpentine were given to clear out bowels, which which was not fully accomplished for a number of days.

30th. The patient is slightly improved, but he is still affected with repeated attacks of the spasms, of which as many as forty-five were counted during the day and night; the breathing is still difficult; expectoration of a frothy mucous character; cannot cough it up; but instead makes strong expiratory efforts; drinks milk and tea, but is not allowed any solid food; no stimulant given. Ordered:—

℞. Nicotinæ, gtt. unam; ext. gent. q.s.; ut fiant pil. vi. St. i. secundis horis.

The pills had a perceptible effect in lessening the spasms during the night; four turpentine enemata were given during the night; he slept for two hours.

31st. Going on favourably; breathing during the spasms very difficult; still expectorating a good deal; pulse 100. Ordered:—

℞. Nicotinæ, gtt. duas; ext. gent. q.s.; ut fiant pil. viii. St. i. tertius horis.

An enema, consisting of leaf tobacco gr. xxx., infused in a pint of water, was ordered, five ounces at a time; also a warm bath; both the pills and enema had a good effect.

November 1st. Three drops of nicotine were ordered to be divided into the same number of pills, one to be given every third hour; slept from three to eight A.M.

2nd. The pills were repeated, also a warm bath; pulse 92.

3rd. Tobacco was ordered as before in enema; pulse 88.

4th. A castor-oil and rhubarb draught ordered; also enema of tobacco as before, and bath.

8th. Enema of tobacco as before.

9th. Nothing ordered.

10th. Enema of tobacco and a cough mixture.

14th. Enema of tobacco.

16th. Tobacco enema, gr. xx. to the pint; ℥v. to be injected; this was the last enema given.

19th. No attack of spasms; cough better, but still has a slight rigidity of the muscles of mastication; can open his mouth about an inch.

21st. Was allowed up for the first time to-day; pulse 88. The patient has now completely recovered without much loss of flesh.

The spasms continued for a period of twenty-six days; and he was suffering for four days before admission.

The total amount of nicotine administered from October 30th to November 2nd, amounted to nine drops.

Juice tobacco enemata were given from October 28th to November 16th, as follows:—

A larger quantity than actually required was usually ordered, to provide for repetition of the enema if the first came away without effect.

Oct. 28, 60 grains of	Tobacco	infused in a	pint of water,	5 oz. were injected.
„ 29, 60	„	„	4	„
„ 31, 30	„	„	5	„
Nov. 3, 20	„	„	5	„
„ 4, 20	„	„	6	„
„ 8, 20	„	„	6	„
„ 10, 20	„	„	6	„
„ 14, 20	„	„	6	„
„ 16, 20	„	„	6	„
270	„	„	49	„

—*Medical Press and Circular, Dec.* 5, 1866, *p.* 572.

14.—CASE OF TRAUMATIC TETANUS SUCCESSFULLY TREATED BY THE DIRECT APPLICATION OF INFUSION OF TOBACCO.

By John B. Junor, Esq., Peebles.

[The patient, a girl, nine years of age, had received a severe injury of the leg by the fall of a large coping stone. There was a lacerated and contused wound of the calf of the leg extending from immediately below the knee to beyond the ankle, eight and a half inches long, and above four broad, laying bare the posterior tibial artery in the whole of its length. In the course of a few days two large sloughs came away, after which water dressing was applied, and the granulations appeared healthy.]

When I paid my visit on the 31st, I noticed a peculiarly anxious expression of face; but as the wound had been newly dressed, I attributed it to pain. Next day, she complained of her jaws being stiff, which excited my suspicions, and I ordered fomentations. When I next saw her, she could open her mouth only to a trifling extent, and the muscles of the neck and abdomen were very rigid. I ordered eight drops of chlorodyne (which was the sedative I used throughout, except on two occasions, which I shall allude to at the end, not to interrupt the narrative) to be given every four hours, fomentations of a decoction of poppy-heads to be applied to the abdomen, also linseed-meal poultices, made with the same decoction, to the wound.

The chlorodyne procured a little sleep, but the tetanic symptoms increased. The rigidity gradually extended over the body, and the paroxysms became more severe and frequent.

I now applied a belladonna lotion to the wound, and raised the dose of chlorodyne to ten drops, which produced a decided amelioration of the sufferings; the mouth opening to a greater extent, and the muscles of the abdomen becoming less tense. This, however, did not last long; all the symptoms gradually increasing in intensity.

On the 5th of September, six days after the first indications of tetanus appeared, I applied to the wound stupes of an infusion of Cavendish tobacco, one half-ounce to the pint of water.

The state of matters at this time was as follows: The muscles of the jaws, neck, back, legs, abdomen, and arms, were quite rigid, the legs widely separated and drawn up, and the hands twisted round. The paroxysms were very severe and frequent, causing contortions of the face (the tongue was frequently bitten), violent shaking of the whole body, and difficulty of breathing from spasm of the muscles of respiration. The sufferings of the child were extreme!

Within two or three hours after the application of the tobacco, the improvement was most marked. All the rigid muscles became, to a considerable extent, relaxed; the mouth could be opened about half an inch, the paroxysms were less severe and frequent, and a good deal of sleep was obtained.

The tobacco caused no sickness; but the appetite, which had been hitherto good, completely left the child, and the efforts to induce her to take food or stimulants invariably induced a paroxysm. I had recourse to beef-tea injections.

After applying the tobacco for three days, as the pulse became very weak and the strength was going rapidly down, I went back to the belladonna lotion. The appetite returned, but unfortunately, the tetanic symptoms became worse also, which caused me again to apply the tobacco (this time one ounce to the pint), with, as on the former occasion, favourable results, but to a greater extent, and without interfering with the appetite. The paroxysms were comparatively trifling and at long intervals; the muscles, however, of the back, legs, and arms continued rigid, and the body, when lifted, was as stiff as a board.

On the 23rd of September, as the wound, which had been rapidly healing, was looking rather unhealthy, I removed the tobacco, and applied water dressing. About three or four hours after, I was sent for in great haste, as the parents thought the child was dying. I found her suffering from a more violent paroxysm than she had yet had, suffocation seeming imminent from the spasm of the respiratory muscles. She had been getting rapidly worse from the time of the change of the dressing. I at once re-applied the tobacco, and in the course, I may say, of a few minutes, the paroxysm passed away, and matters returned to their former state.

Ten days after, for the same reason, I ventured to substitute the water dressing, again the paroxysms returned, although not so severe, and again the tobacco dispelled them.

I put a piece of lint, wet with black wash underneath the tobacco cloth, and the wound continued to heal kindly till the termination of the case. The pulse was quick throughout, about 120, but never very weak, except when the child refused to take any nourishment.

About ten days after I began the use of the chlorodyne, as it was paralyzing the expulsive powers of the bladder, I gave tincture of Indian hemp instead, fifteen drops every four hours. This had not the same sedative effect, sleep almost left, and the tetanic symptoms rather increased. In about forty-eight hours the bladder recovered its power, and I returned to the chlorodyne. On an after occasion, I was again obliged to cease giving it, and tried sol. mur. morph., eight drops every two hours, without any soporific effect. I resumed the chlorodyne as soon as I could, and as it was not necessary to give it so frequently, I did not require to try any other sedative.

After the first eight or ten days, I felt satisfied that the tetanus would not be cured till the wound was healed, and my object in treatment was, to keep the paroxysms as far as possible under control, and maintain the strength of the patient by nourishment and stimulants until that was accomplished. The result proved that I was right. As the wound contracted, the rigidity of the muscles abated; but it was not till the 9th of October that they were sufficiently relaxed to allow the child to sit up in bed. The spasm left the injured limb last. To-day, 30th October, I found her by the fireside, and the wound completely cicatrized.

There can be no doubt that, in this case, the recovery of the patient was due to the tobacco application. The giving up of the use of it was always followed by an aggravation of the tetanic symptoms, which were at once relieved by resuming it.

The suggestion of Mr. Tyrrell, of Dublin, to produce a lager raw surface by blisters or otherwise, in idiopathic attacks, is strengthened by this case.

I tried ineffectually to get nicotine in Edinburgh; but as the remedy was a very severe one for so young a patient, and the case was promising well, I did not think it necessary to send to London for it.

The superiority of chlorodyne over the other sedatives which I used was very decided; and I was so satisfied with it, that I would not have made any change had it not seriously diminished the expulsive powers of the bladder. I find that chlorodyne produces this effect, when taken for a length of time in frequent doses.—*Edin. Medical Journal, Feb.* 1867, *p.* 685.

15.—ON THE TREATMENT OF DELIRIUM TREMENS BY INDIAN HEMP.

By Henry J. Tyrrell, Esq., Surgeon to Jervis Street Hospital, Dublin.

[The patient was 40 years of age; pulse 90, weak and compressible; pupils dilated, and tongue covered with a white, creamy fur. He had had no sleep for three nights. He had been an opium-eater until 12 months before, when he completely gave it up, as he found his health was suffering from it. He had had delirium tremens twice before, and stated that on each occasion Indian hemp, given him by Dr. White, of Downpatrick, had cured him.]

As the use of opium was out of the question in the present case, I determined to give the capsicum treatment a trial, and accordingly I ordered two boluses, each containing 30 grs. of capsicum—one to be given every third hour. His stomach rejected the first, the second he did not vomit; they did not give any relief, as on the next day, the 16th, he was much worse in every respect, had no sleep, and his mind was evidently affected. I ordered him 3 draughts, each containing ℥20 of the tincture of cannabis indica, one to be taken every third hour. He had the first at four p.m., after the second he became very excited; at eleven p.m. he got the third, and at one a.m. he fell into a deep sleep which lasted about four hours.

When I saw him at ten a.m. on the 17th, he was quite a different man; the nervous excitement was gone; he expressed himself as quite well, but very weak and hungry. During the day he drank two pints of strong beef tea, and in the evening he took another draught, as he was afraid he would not sleep without it.

He remained in hospital two days longer to recruit his health, and left on the 20th quite well. As the treatment by the Indian hemp was so satisfactory, I wrote to Dr. White to test the truth of Mr. K.'s statement, and he kindly informed me that he treated Mr. K. on two occasions with the Indian hemp, and that the effect was marvellous. The dose he gave was forty drops every hour and a half, and that he was obliged to increase it to eighty drops before sleep was produced—altogether he used in the first attack one ounce, and in the second a little more of the tincture.

Whether there was a difference in the strength of the tincture, or that the attack for which I treated him was only beginning, it is remarkable that 60 ℥ was only required.

I am not aware that the use of Indian hemp has been adopted in delirium tremens, at least I do not find it mentioned in the books I have consulted; and I certainly would not have pres-

cribed it, had not the patient mentioned its use to me; and although opium-eating is very uncommon in this country, at least in hospital patients, still it is of great importance to have a medicine which may be used instead of it, when that drug is unsuited from idiosyncrasy or any other cause.—*Medical Press and Circular, March* 13, 1867, *p.* 244.

16.—DELIRIUM TREMENS—TREATMENT BY CAPSICUM.

(From the Clinique of Dr. Lyons, at the Richmond, Whitworth, and Hardwicke Hospitals, Dublin.)

Further experience in the use of this somewhat novel remedy has satisfied Dr. Lyons of its value and efficacy. Its success when morphia had entirely failed has been already noted in our pages. Since then it has been employed repeatedly, and with like excellent results. It may, therefore, be confidently recommended as a safe and judicious remedy for general use in this malady. It produces, says Dr. Lyons, a sense of warmth and comfort in the stomach when first taken, allaying the agitation, debility, and cardiac and epigastric anxiety, which are such constant and distressing features of the disease. In from twenty to thirty-grain doses, made up in bolus with honey of roses, it can be taken without inconvenience, and in from one to three hours will be found to produce sleep, from which the patient awakes conscious and convalescent. A recent and very striking case in the Whitworth Hospital, under Dr. Lyons's care fully confirms these observations.—*Medical Press and Circular, Dec.* 19, 1866, *p.* 619.

17.—CASE OF PURE UNCOMPLICATED DOUBLE BELL'S PARALYSIS.

By Dr. Lyons, Richmond, Whitworth, and Hardwicke Hospitals, Dublin.

Amongst the most interesting cases which for some weeks has been the theme of comment and study in Dr. Lyons's wards, has been a well marked example of this extremely rare affection.

The patient is a man of fine vigorous form, aged 28, previously healthy, and of by no means generally intemperate habits. About two months since, after a drinking bout, he lay all night on a damp floor, exposed to a severe draught, blowing on his face. When he came to himself the next day he found that the right side of his face was paralysed, and in less than a week subsequently the left side became engaged. He now became alarmed at his condition, and sought admission into hospital. In the state of extreme apprehension and dejection of spirits

from which he now suffered, and with the total expressionless aspect of all his features, the conjested eyes and formless pendent and drivelling lips, and imperfect speech, the first impression left on the mind was that produced by a patient labouring under profound centric cerebral lesion with general paralysis; and Dr. Lyons confesses that he was all but inclined to consider the case unfit for admission except to some asylum for incurables. Careful exploration satisfied him, however, of the complete absence of any paralytic lesion than that of the portio-dura at both sides. It was not, however, for some days that this opinion could be confirmed. The sense of touch, taste, smell, hearing, and sight were rigidly tested and found to be perfect. There existed the incapacity to close the eyes, while the lower lip hung so powerless that in shaving he had to adopt the expedient of fixing it by the teeth. Mastication and swallowing of food were rendered necessarily difficult and troublesome by the lodgment of parts of the alimentary bolus and fluids in both dental arcades, while all words involving the articulation of the labials were pronounced exceedingly imperfectly. The paralysis of all parts of the face dependent on the seventh pair was complete and extreme. After suitable preparation of the system the patient was placed on the use of nux-vomica; half a grain of the extract subsequently increased to one and a-half grains was given in pill three times a day. Blisters were applied over the root of the pes-anserinus, and dressed with an ointment containing two drachms of nux-vomica to the ounce. In about three weeks the left side of the face, that which was last affected, gradually and finally got well, and perfect power was restored to all its parts. The right side proved much more obstinate and rebellious to treatment. He was repeatedly blistered, hypodermic injection of strychnine, about one-twentieth of a grain was repeatedly employed, and finally electricity was used for a protracted period. A slow, but very decided gradual amendment became perceptible, and every one of the affected muscles re-aquired a certain amount of power, both zygomatics, the levator labii, superioris alæque nasi, corrugator supercilii, orbicularis palpebrarum, and oris being severally capable of being thrown into partial action at will. Amendment steadily progresses, but at this time is not yet fully completed. This case is one of unusual interest from the obscurity of it, and the difficulty of the diagnosis at the outset, the usual contrast in muscular power and expression which so facilitates diagnosis in the ordinary form of one-sided Bell's paralysis being here wanting. Of the rarity of the affection in its double seizure some opinion may be formed, from the fact that no mention is made of it in the works of Watson, Trousseau, or Aitken, and M. Devaine appears to have met with no case, except in

connection with centric cerebral lesion, and complicated with paralysis of the fifth and other nerves, resulting therefrom.—*Medical Press and Circular, Dec.* 19, 1866, *p.* 619.

18.—CASE OF HYSTERICAL CHOREA.

Under the care of Dr. Murchison, at the Middlesex Hospital.

[The patient was a domestic servant. Her illness commenced about six weeks before admission, without any apparent cause, and consisted in severe convulsive movements, chiefly on the left side of the body.]

For the first three weeks the attacks came on only during the night, but subsequently they became more severe, and occurred in the daytime as well as at night.

After the patient's admission these fits were found to present the following characters. They commenced with a choking sensation like globus hystericus, and successive efforts at deglutition. These were soon followed by violent muscular agitation, confined for the most part to the head and the left side of the body, and interrupted occasionally by severe spasmodic rigidity of certain muscles, as the result of which the head was drawn sometimes to one side and sometimes to another, and occasionally there was a condition approaching to opisthotonos. The movements were so violent that the patient must have hurt herself if she had not been in bed. Any attempt to restrain them only made them worse. The attack was not preceded by any scream, or accompanied by any loss of consciousness or pain. The patient would converse freely while the movements were going on, and with her right hand endeavour to restrain the movements of the left; and what was more remarkable was that the movements were to some extent under the control of the will. In the midst of a fit she could pick up a pin or a card and hold it with her left hand, which went directly at the object and grasped it, the movements being for a few moments suspended. Sometimes she had to wait a few seconds before trying to seize the object. The duration of the fits varied from a few minutes to several hours. She had five, six, or more during the day, and often they appeared to be induced by excitement, as at the hour of visit. There were no movements during sleep, and never any in the intervals of the fits.

As regards her other symptoms; the pulse was 84 and regular; the physical signs of the heart and lungs were normal; the tongue was clean and moist; the appetite was capricious, but there was no symptom of indigestion; the bowels were regular. There was no headache; but there was slight strabismus, the left eyeball, when she looked upwards, being drawn upwards and

outwards more than the right. The left pupil was also about one-third larger than the right. The patient stated, however, that ever since she had been a child there had been something peculiar about her eyes.

The patient was ordered a pill containing a grain of valerianate of zinc, a grain of sulphate of iron, and three grains of extract of gentian, three times a day; and, on January 7th, 1867, she was up and greatly better, the fits consisting of little more than slight muscular twitchings.

Although occurring in a rheumatic patient, Dr. Murchison pointed out that the symptoms in this case differed in two particulars from true chorea—viz. : 1. In the complete intermission of the movements during the intervals of the paroxysms. 2. In the patient's ability during the paroxysms to control to some extent the movements, and at once to seize a small object and to hold it. The case was evidently one of those which had been well described by Trousseau under the designation of "hysterical chorea." In one of the cases recorded by Trousseau, the movements were equally violent as in the case now recorded; and also confined for the most part to the head and the left side of the body. But if the patient was placed in front of a piano, the movements at once ceased, and she could play for hours without failing in a single note.—*Lancet, March 2, 1867, p. 270.*

19.—ON FARADIZATION AND GALVANISM.

By W. H. Sandham, Esq.

Faradization, may be effected by an electro-magnetic, a magneto-electric, a friction, or a galvanic battery. This is not all, it may be produced by an inverse or a direct intermittent current from any one of these batteries, and they may be applied with one pole on the spine, and another on any part of the body, or one pole at the origin of a nerve or muscle, and the other at the peripheral extremity of the former on the centre or insertion of the latter. I have given the treatment of disease by electricity some study, yet I am often at sea as to the instrument, the current, or the mode of application used in, I may say, most cases reported; so that future reports of cases would be far more valuable were the reporters more particular in naming the instrument, the particular current, and the mode of application.

Hemiplegia.—I treated a lady lately who fell down suddenly in her bedroom, and was taken up hemiplegic on the right side. Her arm was permanently flexed to an acute angle, the fingers almost stuck into the palm, her leg powerless, and foot so

clubbed that when on the ground it rested on the outer edge; muscles of the face and tongue unaffected; sensation and heat of the whole side normal, or rather more than the opposite side. She was treated by various medical gentlemen, and twelve months after the first attack I was consulted. The muscles of the superior extremity were much wasted, and in the flexed position described, while the inferior extremity was so swollen and œdematous that from the thigh down was one shape, it could only be moved by her attendant. On the third application of the inverse interrupted current of the primary wire of an electro-magnetic apparatus, I could, with the greatest ease, extend the forearm and fingers at pleasure. The leg continued longer insensible to the current, but this too improved rapidly; the œdema of the limb entirely disappeared, and she could now lift it and make a kick at you herself. I used the interrupted current and the continous uninterrupted current of a galvanic apparatus on alternate days. The muscles of arm and leg became defined, as the lady herself used to say, "This arm is now more plump and round than the other." But at this stage of progress, some kind friends, who possessed too much brains, interfered, and she gave up the treatment, all because she suffered a little severely during the application of the interrupted current—notwithstanding the evident improvement. While treating this case I was forcibly struck with the idea—in fact, convinced—that in such cases as the one described, we come to the conclusion that one half the body is paralyzed, but I now think this a very erroneous diagnosis. Take the arm in this case: it is permanently flexed from the moment of the fall. Is this evidence of paralysis? Nay, rather evidence against it; for after passing an interrupted current for a few minutes along the extensors, I could extend or flex the limb and fingers at pleasure—proving either that the extensors alone were paralyzed, or that the flexors were permanently flexed by spasm, caused by spinal irritation without paralysis of the extensors at all; the current at all events either suppressed the spasm or restored the paralyzed extensors, so that the one antagonized the other, as in health. I am now disposed to think this was not a case of paralysis at all, but a state of parts produced purely by spinal irritation. The lady's intellect, speech, sight, digestion, and circulation, were healthy. I think this view of helpless limbs much overlooked, and very suggestive to a thinking mind. I here put this idea before my medical brethren, in hopes others may reflect thereon, and give us their experience; for so forcibly struck was I by this case, that I conclude we often arrive at a wrong conclusion, when on seeing one who has lost the control of a limb or the power of locomotion, that paralysis is always the cause, when permanent spasm,

consequent on spinal irritation or injury at the origin of a nerve, may be the cause.

Distressing Facial Neuralgia.—Over a month since a Cork gentleman consulted me. He had most acute facial neuralgia of right side; sometimes it was intense in the temple, sometimes in the upper, sometimes in the lower jaw, and again immediately in front of the ear. It commenced about nine months ago. He did everything that was recommended to him; among the rest he took ten dozen of quinine pills, used liniments, mustard, and other plaisters, stupes, &c. At length he was recommended a sea trip, and so anxious was he to get well that he forsook his business, and at considerable loss and expense sailed for Rotterdam; but he suffered all the way, and returned as bad as ever, when some party whom I before cured recommended him to me. I treated him with a direct continuous galvanic current along the three branches of the fifth nerve. The very first application afforded relief, and after a week's treatment (daily application) he said "that he had not had such a week for months." I repeatedly asked him had he any bad teeth on that side. His reply always was "No." But conceiving I used to hunt, as it were, the pain into or by the side of two teeth, I came to the conclusion something was there wrong that again lit up the neuralgia after I had removed it, and I discovered that when a cold body touched near the teeth a pain shot through them, and so lit up the neuralgia again. I gave my opinion that unless two small teeth were extracted I could not permanently cure the neuralgia. He consented, and with a key instrument, along which I conducted a galvanic current for about five minutes, I lugged out the two teeth at once. I applied galvanism on two successive days, so that after nine applications he continues well to this date. His own words are—"I am in Heaven." No medicine whatever administered.

Facial Neuralgia of Three Months' standing.—Mrs. C——y, Cork, came to me after three months' intense suffering from facial neuralgia, for which she had been treated by several medical men. When I first saw her the side of the face and about the ear was greatly swollen, and profuse purulent discharge from the ear, with intolerable pain in side of face. I used a direct continuous galvanic current daily for a week. The first application removed all acute pain, and the swelling and discharge rapidly disappeared. She continues well to this hour. No medicine given.

Severe Lumbago of Three Months' standing.—Mr. M., Cork. After three months' suffering from lumbago, consequent on spinal irritation, during which time all that the ingenuity of his intelligent physician could suggest was tried, he sent for me.

After the fifth application of a direct continuous galvanic current, and without the aid of any medicine whatever, on the fifth day he was able—free from pain—to be out of bed, and to attend to his business; and after the ninth application I left him well, and he still continues so; this is now several months past. But to enumerate the number of cases successfully treated by me in Cork would be tedious and unnecessary after the many already reported by me in the Medical Press and Circular, and the Electrician. Suffice it to say, that electricity as a therapeutic agent, scientifically administered, cannot any longer be neglected; and I am astonished beyond measure, in the face of the vast mass of evidence in its favour, that a single medical man can be found bold enough to ignore it in the present day, but it is only those who are unacquainted with what it is capable, who venture to do so. Lately, in consultation with two medical gentlemen, in a case where the patient had not had a half hour's real sleep for a couple of months (notwithstanding that one of them tried a large proportion of the drugs in the Pharmacopœia to produce it), and was suffering from intense dyspnœa, owing to pure spasm of the respiratory muscles, on proposing galvanism one of them replied:—"Oh! it hurries the circulation too much." The other—"Oh! it stimulates too much," &c., &c. Still I persevered, and galvanism allayed the dyspnœa, and secured a sleep that lasted from eleven o'clock p.m. to nine o'clock a.m., next morning. Surely this was not a coincidence: did sleep follow because three medical men met in consultation? Certainly not. I look upon electricity as so important an agent in the treatment of disease, that were I one of the court of examiners attached to any of the universities, I would reject any candidate for a medical or surgical degree who could not give evidence of his having well studied electricity as a remedy in disease.—*Medical Press and Circular, Jan.* 30, 1867, *p.* 96.

20.—ELECTRICITY AS A TONIC IN ANÆMIA, DYSPEPSIA, AND GENERAL DEBILITY.

By Dr. George M. Beard, New York.

That electricity is of great service in certain forms of paralysis is a fact long since recognised by the profession, but until within a few years its wonderful tonic powers had not even been thought of. The researches of Meyer and Remak in Germany, and of Duchenne and Becquerel in France, have done much towards the development of the remedial uses of this mysterious agent; and the success that has attended their experiments in the treatment of nervous disorders is worthy of far more attention than it has hitherto received.

For while it is true as is commonly supposed, that galvanization and faradization * are specially indicated in certain forms of paralysis, it is also true that they are still more valuable in general nervous debility, whether it manifests itself in the shape of dyspepsia, chorea, neuralgia, anæmia, or amenorrhœa. For a number of chronic, asthenic affections, faradization is a far safer as well as more effective remedy than any internal tonic with which we are familiar. If it be applied thoroughly, with the negative pole at the feet, and the positive down the spine and over the stomach and bowels, its immediate effects are in some cases exceedingly exhilarating, and if regularly and faithfully repeated it permanently benefits the whole digestive apparatus.

Case 1.—Mr. E., a gentleman twenty-three years of age, presented himself, complaining of loss of appetite, hypochondriasis, and great nervous depression. He was a tall, spare man, somewhat above the medium height, with sunken eyes, and a sallow, anxious countenance. It was evident that he had lost all his enjoyment of life.

When he first came into our office, he stated that for a year and a half he had been the victim of extreme nervousness, and had found it very difficult to perform half of his duties where he was employed. He said that it was impossible for him to confine himself to his writing desk for any length of time, but that he was obliged to throw aside his pen and walk about to find relief. Constipation and vertigo were prominent symptoms, and the patient was evidently in an anæmic state. He had taken much medicine, with only temporary and partial relief. When the electricity was first applied to him in the early part of July he could bear only the slightest current. He continued to come regularly every third day, until the first of August, with gradual but marked improvement. The constipation was entirely cured ; the vertigo no longer annoyed him ; and he could stand or sit at his desk all the day without inconvenience.

Case 2.—Mr. F., a broker, about thirty years of age, came to us one day for the purpose of trying electricity as a last resort for the cure of a peculiar and aggravated form of neuralgia. He was a short, puny youth, with a hollow, unhealthy cast of expression, but of an exceedingly nervous, vivacious temperament. The muscles of his chest and extremities were small and soft, and the horrible agonies he had endured seemed to have left their impress on the whole system. The case is somewhat remarkable.

* For the benefit of those who have not given the subject special attention, it may be well to explain that galvanization refers to the use of the primary current, faradization to that of the secondary.

He stated that for over two years he had been a great sufferer from severe paroxysms of pain near the region of the kidneys. The attacks came on periodically every eleven days, seldom varying more than twenty-four hours, and lasting from one to two days. He had taken immense quantities of quinine, and had been somewhat benefited by it, as he thought, but the relief it afforded was merely temporary. We examined his urine with care, and arrived at the same conclusion as his previous advisers —viz., that the difficulty was mainly nervous. The patient received his first application the 10th of July, and continued to come every other day until the middle of August.

For the first time in many months he escaped the usual paroxysms, and up to the time he discontinued treatment he had no return of his sufferings.

Case 3.—Mr. C., aged fifty-two, first presented himself for treatment October 1, stating that for a year and a half he had suffered from jaundice. The whole surface of the body was of a marked yellow colour and the conjunctiva presented the characteristic appearance. He complained much of anorexia and nausea, but most of all of a continual and overpowering drowsiness. Electricity was applied on his first visit, and also on the 7th and 16th inst. At the end of the treatment, his skin and conjunctiva had regained their normal colour, his mind was clear and bright, and to all appearance the cure was complete.

Case 4.—In the early part of September of last year, a pale-lipped, sad-eyed lady came panting into our office, and almost fell down on the settee before she could begin to tell her story. So exhausted was she with the exertion of ascending one flight of stairs, that her speech was at first only in broken utterances, and we very naturally surmised that she was labouring under some organic derangement of the heart. But the history of the case seemed to point unmistakably towards anæmia as the prime source of all her unpleasant symptoms. She was troubled with great depression of spirits. Amenorrhœa had existed for nine months.

The patient was so hysterical that the first application was given with difficulty. She could endure but the slightest current. Whenever its strength was much increased, faintness was at once produced. This extreme susceptibility was, however, speedily overcome, and after the first week she could bear a current of ordinary severity without the slightest discomfort.

Applications were made every other day for one month, at the end of which time the improvement was most satisfactory. Her appetite was good, her mind cheerful, and her cheeks presented the ruddy glow of health. The menses returned after seven or eight applications. A few days ago she came briskly up the stairs, with a light, elastic step, and with a smiling rubi-

cund countenance. All her cardiac symptoms had disappeared, her breathing was natural, and her whole appearance was that of a person in the heyday of youthful vigour.

Case 5.—J. D., aged twenty-three, stated that for one year he had suffered from dyspepsia. He found it necessary to exercise the greatest caution in diet, and for months he had been unable to eat a hearty meal without discomfort. So thoroughly had he crucified all his love for the palatable and nutritious, and so narrowly had he restricted himself in table enjoyments, that he had reached that terrible stage when every day was a living death. Since the first appearance of the disease he had lost some thirty-five pounds in weight. During the month of September he received ten general applications, when he reported that he could eat and assimilate the ordinary articles of diet without physical or mental disquietude, and he had regained some twenty pounds of flesh.

We have employed faradization in a number of cases of anæmia and general debility, depending on a variety of causes, and uniformly with most satisfactory results, except when pulmonary tuberculosis existed. Inasmuch as the tonic powers of electricity are very observable in asthenic cases, dependent on or associated with derangement of the nervous or digestive apparatus, it would be natural to infer that consumption, which is essentially a disease of debility, would be speedily benefited by electrical treatment. But it appears that such is not the case. We find that those who have tubercular deposit in the lungs are not benefited, but are positively injured by the application of electricity. Whenever we have applied it to them they have always complained of exacerbation of their symptoms. It is difficult to find any theory on which this inconsistency can be satisfactorily explained. It may be that the use of the primary current would serve a good purpose in such cases; but so far as our observation goes, faradization works evil, and only evil, on patients who have passed into the second stage of pulmonary tuberculosis.—*Medical Mirror, Feb.* 1867, *p.* 76.

DISEASES OF THE ORGANS OF CIRCULATION.

21.—REMARKS ON CHLOROSIS AND HEMORRHAGE.

By Sir Henry Marsh, M.D., Bart., Surgeon in Ordinary to the Queen in Ireland.

[Of those affected with this disease a very large proportion are strumous. Sir Henry Marsh has never met with a case of spontaneous chlorosis, except in a member of a family, upon each of whom the characteristics of the strumous diathesis have been

unequivocally impressed. Passing on to the part of the paper referring to the treatment of chlorosis, Sir H. Marsh remarks :]

Neither do bark, nor mercury, nor wine, nor bleeding, nor opium, nor antimony, even when most judiciously administered, exhibit effects more manifestly therapeutic than iron does in this disease ; nor does iron bring more of wealth to the inhabitants of the country from the bowels of whose earth this valuable ore is dug up, than it does of richness to the blood of the chlorotic patient. It is remarkable, too, how universally diffused are chalybeate springs, as if it were the design of Nature that iron in abundance should be mingled with the blood, and that it should be incorporated largely with vegetable matter. Whether the preparations of iron produce their effects directly by augmenting the proportion of red corpuscles in the blood, or indirectly by invigorating and improving the digestive function, still there is no medicine the curative properties of which are more fully established. The probability is, that it acts usefully in both ways. Iron, then, judiciously administered, is a most valuable and important therapeutic agent. Nor is its salutary action restricted to chlorosis ; there are many other pathological conditions of the animal economy over which it possesses the same power in improving the blood, and thus restoring tone to the nerves and vigour to the muscles. Often in chlorotic patients have I watched the change wrought in the system from day to day under the vivifying influence of this remedy, and most striking, and sometimes rapid, have been its health-restoring effects. Were all cases of chlorosis simple and unmixed—were it not liable to the various complications to which we have already alluded, then, indeed, the treatment were easy, and the cure certain. But it is not always the case : various co-existing affections complicate the treatment, and even forbid for a time the employment of chalybeates ; besides, there are individual constitutions so intolerant of iron, so peculiarly affected by it, that we are compelled altogether to forego the administration of this useful remedy. We occasionally, also, meet with patients who cannot endure it, except in quantities too small to effect a cure ; we are, in consequence, sometimes compelled by necessity to look around for a substitute, and the most efficient one which I have been enabled to discover is bismuth. Under the influence of this metal I have seen gradual and satisfactory recoveries take place in persons whose idiosyncrasy forbade the use of iron. I must not omit to mention the marked utility of cinchona and its salts, and of the carbonate of ammonia. Many bitter vegetable tonics, also, are productive of benefit ; but I place more reliance on bismuth, carbonate of ammonia, and the salts of Peruvian bark, than on any of the other substitutes for iron which are usually prescribed. The

injurious effects produced by iron are throbbing and pulsation of the vessels of the head, headache, vertigo, and sometimes epistaxis. In one case which lately fell under my notice it produced all the symptoms of intoxication; in another, though given in moderate doses, it caused a delirium which did not subside until the third day. Its tendency is also to produce acceleration of the pulse, heat of skin, and febrile excitement. In a few instances I have observed a well-characterized periodic fever to have resulted from its excessive administration.

There is another ill effect which iron is apt to occasion,—constipation of the bowels; this itself is one of the most uniform symptoms of chlorosis; it is, however, augmented by the ferruginous treatment. Hence arises the important practical rule of thoroughly evacuating the bowels, and of completely allaying intestinal irritation, as a preliminary step to the administration of iron; and of combining with it, during the whole progress of the treatment, such mild aperients as are best suited to the individual constitution, and best calculated to maintain a sufficient and regular action of the bowels.

The mode of administering iron is not unimportant. There is none superior to that of drinking the natural waters at a chalybeate spa; its distance enhances its value, because it involves the necessity of travelling, of change of air, climate, scenery, and associations; and the more the patient enjoys travelling, the more exhilarating will it be to the spirits, and the more effective will the remedy prove. Of all the distant spas, I know not one more generally efficacious than the Langen-Schwalbach, in Nassau. There are many, however, for whom the weakest of these springs is too powerful; for such, a water less strongly impregnated with the mineral should be selected. Domestic or pecuniary circumstances, and oftentimes the actual condition of the patient, will preclude the adoption of this remedy; so that, for the many, the treatment must be conducted without removal from the paternal roof. To the labours of the chemist we are indebted for several excellent new forms in which this mineral may be exhibited; nor is this without its value, for the preparation which agrees best with one constitution does not accord equally well with another. There is also considerable variety in their effects; the muriated tincture, for example, produces on the stomach, bowels, and kidneys, an action far different from that of the subcarbonate or the sulphate; and so of the other preparations. Besides, in a disease which generally requires for its cure a prolonged course, it is no small advantage both to vary the preparation, and to be enabled to administer it in a palatable form. The acetated tincture of iron, a formula for which we are indebted to the late Dr. Percival, of this city, is, when carefully prepared and well preserved, a

valuable medicine; given in asses' milk, or in cow's milk, divested of its curd, it may be easily taken, and long persevered in.

The wine of iron, an old preparation, is one sometimes to be preferred, and may be given in the same manner as the acetated tincture. It is mild in its action, and very suitable for children. The wine of iron and rhubarb is, in many instances, a compound productive of excellent effects. The combinations of iron with ammonia are extremely useful; ammonia forms an important adjunct in the treatment of many cases of this disease, particularly those which are characterised by distessing coldness of the extremities. Mr. Bewley's effervescing chalybeate is a very eligible preparation, and applicable to many cases; impregnated as it is with fixed air, it is grateful both to the palate and to the stomach. The following formula I have also found suitable to many cases; water of the citrate of ammonia, three drachms; water, six drachms; syrup, a drachm; citrate of iron and quinine, from one to three grains:—mix, for a draught to be taken twice or thrice daily.

In both chlorosis an anæmia, I have observed that the treatment has been rendered more certainly, and more speedily effective, by administering iron in conjunction with Peruvian bark and the salts derived from it. Hence arises the value of the triple salt just named; hence also the efficacy of the aromatic iron mixture, which, when united in equal proportions with Griffith's mixture, constitutes a very useful compound. I have often prescribed—and I think with excellent results—bark, iron, and ammonia, conjointly in the following manner:—Decoction of Peruvian bark, ten drachms; tincture of bitter orange peel, one drachm; syrup of ginger, one drachm; bicarbonate of ammonia, fifteen grains. Mix. To be taken two, three, or four times daily, in effervescence, with half an ounce of lemon-juice. The compound iron pill, so prepared as to insure its solubility in the stomach, and repeated in sufficient doses three or four times daily, with the addition of about half a grain of sulphate of quinine — which, though an unchemical formula, increases much the efficacy of the compound—forms one of the most generally and certainly effective modes of administering iron. In pill it is less likely to produce headache, than in solution; and for those who can with facility swallow pills, this mode of introducing iron into the system is at once more easy, and admits, without causing disgust, of being longer continued. The saccharine proto-carbonate, diffused in a vegetable bitter, is also an excellent chalybeate. In cases which require a mild aperient, in co-operation with the chalybeate, I have found the following powders particularly useful:—Bicarbonate of soda, fifteen grains; tartaric acid, ten grains; powdered white sugar,

half a drachm. This powder should be kept in a dry place, dissolved in a wine-glassful of water, and swallowed whilst effervescing. These powders I have been in the habit of prescribing for the last ten years; they were first prepared for me by the late Mr. Fergusson, of Kildare-street. I saw lately in a periodical a good formula for this powder, and very similar to the one now given. As a general rule—to which, however, there are some exceptions—iron should be given in small doses. Some of the natural chalybeate springs, which possess remarkable restorative properties, hold extremely minute quantities of iron in solution.—a hint derived from nature, which we may often advantageously adopt.

The effect of iron in changing the colour of the fæces is so well known that it is unnecessary to dwell upon it; it is also capable of producing an alteration in the aspect and properties of the urine. In proportion as the amount of red corpuscles in the blood is increased by the use of iron, change of air, or other remedies of a tonic nature, so is the quantity of urea and uric acid in the urine augmented. If the chalybeate treatment be too long persevered in, it may lead to and establish a condition of the system directly the reverse of that for which it was originally prescribed. Some time since I saw a young lady, whom, several months previously, I had treated for distinctly characterized and extreme chlorosis. In the interim she had gone to the country, had travelled, and had persevered in the chalybeate treatment for many weeks after the chlorotic symptoms had disappeared. When I saw her, I found her in a totally opposite state, complaining of flushings, headache, red pimples, and a deeply florid colour of the face. Such were the symptoms, which now troubled her far more than her former death-like pallor, and for which she more anxiously sought a remedy. The transition, in her case, was striking; she had been chlorotic, she was now hyperæmic; the red corpuscles, which had been minus, were now become plus. Of this transition I have met with several well-marked instances. A change having taken place in the condition of the blood, the treatment should likewise be changed, since the remedies necessary to ameliorate the condition of the blood in chlorosis, if too long persevered in, may originate an opposite and equally injurious state of the system. The truth of this remark is exemplified in the individuals who, by profuse hemorrhage, are reduced to the chlorotic state. In many of these instances (in females, from uterine hemorrhage; in males, from long-continued hemorrhoidal bleeding; and in both, from profuse epistaxis) the blood is so thinned that iron becomes the efficient remedy; but if continued too long, hemorrhage is reproduced.

Having dwelt upon the effects of iron, and upon some of the

formulæ for its administration, the inquiry suggests itself, do we possess any medicine capable of diminishing the amount of red corpuscles, when in excess, of equal efficacy with iron (whatever be its mode of action) in augmenting their quantity when deficient? Can we, in fact, take away from the richness of the blood with the same certainty that we can add to it? Obviously by bleeding, abstemiousness, and evacuations, the whole mass of the blood may be attenuated and impoverished: by these means, however, the blood is not only deprived of its red corpuscles, but all its constituents are wasted, and the object of diminishing the proportion of red corpuscles alone is not attained. Now this is a very interesting inquiry, and merits the fullest consideration. I shall merely touch upon it at present, and reserve more extended observations respecting it until we shall have spoken of the various forms of hemorrhage. I cannot, however, avoid noticing some remarks which have been made on this subject by Dr. Freke, the clinical clerk to our medical wards, to whom I am indebted for much valuable aid in our researches in Steevens' Hospital, and whose accurate and extensive knowledge of organic chemistry is of great value in the investigation of the phenomena of disease, and its treatment.

In the year 1843, Dr. Freke published in the *Medical Times* the following inquiries:—"Would it not, then, be of importance if any means could be suggested whereby the red globules alone might be diminished, while the other constituents of the blood remained unaffected? Could this be accomplished by the *hydro-sulphuret of ammonia?*" He then proceeds to express his belief in the twofold possibility that such end might be effected, and that the hydro-sulphuret of ammonia might be possessed of the power of depriving the red globules of an essential constituent, "appropriating to itself a portion of that iron which would otherwise have contributed to the formation of the red globules." His grounds for such belief were, conjointly, the known affinity between iron and sulphur, the observed effects of hydro-sulphuret of ammonia on the economy, and the supposed function of iron in the globules. In the last number of the same periodical appeared an article, headed, "Researches on the Human Blood," by M. Bonnet, of Lyons, the concluding paragraph of which is as follows:—"M. Bonnet has further remarked that the hydro-sulphuret of ammonia destroys the globules completely, and deprives the blood of the faculty of assuming the bright scarlet colour of arterialization." Thus the suggestion put forward by Dr. Freke three years ago has been in a measure confirmed by the recent researches of M. Bonnet. This important practical inquiry requires further investigation; it may lead to valuable results. Whether hydro-sulphuret of

ammonia acts primarily on the nervous system, as a sedative poison, or its direct effect be to dearterialize the blood, still, as a medicine, given in well-regulated doses, it may yet be found to possess curative properties.

In the second number of the *Dublin Medical Journal*, May, 1832, a case of disease of the heart was published, at my request, by my late friend Dr. Newton, in which the hydro-sulphuret of ammonia having been administered, the heart's action was reduced to forty-eight in the minute, with an abatement of all the urgent symptoms. In other cases, too, the influence of this medicine upon the heart and pulse were very remarkable. I was led to adopt this practice by the accounts given of it by Dr. Rollo, in his work on "Diabetes." I may further observe, that I have been for many years in the habit of prescribing the hydro-sulphuret of lime in the treatment of diseases of the skin. I have employed it internally, in doses of from ten to thirty drops, sufficiently diluted; and externally, in the form of vapour, of lotion, and of liniment. I have reason to speak very favourably of its effects, more especially in those cases in which, from appearances at least, we should be induced to expect an excess of the red corpuscles. Might not its action be similar to that of the hydro-sulphuret of ammonia? —and might not this investigation, if fully carried out, throw a clearer light upon the manner in which the sulphureous waters of Lucan, Harrogate, Aix-la-Chapelle, &c., and the various preparations of sulphur, influence the animal economy. The inquiry is one of interest, and involves the consideration of the treatment of a large proportion of cutaneous affections.

Before dismissing the subject of chlorosis we must notice the opinion entertained by some, that there is a close relation between the functions of the great sympathetic nerve and the symptoms of chlorosis. There are, undoubtedly, strong grounds for the opinion. The ganglionic system of nerves, termed the sympathetic, exercises so paramount an influence over digestion, absorption, deposition, secretion, circulation, respiration, and reproduction, that we cannot but conclude that many of the phenomena of chlorosis are traceable to a primary derangement in the function of this important and widely distributed nerve. I find that Dr. Hill has made some remarks on this subject, and written a sketch of the anatomy and functions of the sympathetic nerve, and its intimate connexion with the essential symptoms of chlorosis, which, when completed, shall be laid before the profession. We have noted, and have on record, a large number of cases, both of chlorosis and of hemorrhage, in which the blood has been carefully examined; these, in a condensed form, shall be given after the subject of hemorrhage shall have been treated of.

To Dr. Hill I am deeply indebted for his energetic co-operation in all these investigations: without the aid of his talents, industry, and perseverance, I could never have prosecuted these inquiries.

It is to be regretted that hitherto our investigations have been restricted to venous blood, the opportunities of examining arterial blood being rare indeed.

In the use I have made of the term anæmia, I wish it to be understood that it is intended to imply a diminution in the density of the blood, with pallor and debility, without any reference to its quantity, which may be either augmented or diminished.—*Medical Press and Circular*, *March* 6, 1867, *p.* 213.

22.—ON EPISTAXIS.

By Sir Henry Marsh, M.D., Bart., Physician in Ordinary to the Queen in Ireland.

Close observation of the natural process by which this exudation is effected, affords much useful instruction, and teaches us what the true nature is, of many of those internal and unseen hemorrhages, which formerly, and still are popularly, referred to the rupture of the trunk of a blood-vessel. This, doubtless, is the occasional, but comparatively rare, cause of a fatal hemorrhage. The most frequent cause of hemorrhages, often fatally profuse, is,—as may be observed in epistaxis, capillary exudation,—blood extravasated, not from an arterial or venous trunk, but, from myriads of turgid capillary and exhaling vessels.

A remarkable case, elucidating this truth, occurred at Steevens' hospital. A young man, labouring under hemoptysis, was admitted a few hours before my morning visit. Having spoken to, examined, and prescribed for him, I passed on. Whilst talking to the patient who lay in the next bed, I heard a gurgling sound and turned round: the man to whom I had but a moment before been speaking was dead,—was suffocated. A minute and careful examination disclosed neither tubercle, nor cavity, nor consolidation, nor lobular nor diffuse apoplexy, nor ruptured trunk, in any part of the parenchyma of the lungs; all the larger bronchi were nearly filled with blood, which was coagulated in them, particularly at and about the bifurcation, so as to obstruct the ingress of air. It was a case of bronchial hemorrhage,—of copious sweating of blood from innumerable capillary tubes distended with blood. I say sweating, because I doubt there being any rupture or breach of surface.

In some forms of fever, sweating so profuse has occurred as to soak through the bed, and to accumulate in large quantities in a vessel placed underneath.

A capillary extravasation of red blood may be as profuse as a capillary exudation of white blood. A mucous membrane may copiously sweat blood; I have seen the same thing happen from the pores of the external skin of the face. One case, a very remarkable one, I shall briefly refer to. The patient was a young woman four or five and twenty years of age; herself intensely strumous, as were also her parents and brothers; she was subject early in life, both before and after puberty, to spontaneous epistaxis. She was attacked with fever. The symptoms presented the usual aspect of scarlatina; a dusky red rash was universally diffused, with sore and swollen throat, but no ulceration. There was a well-marked febrile movement in the system. On the third day the whole characters of the case were altered; fever subsided, the throat was no longer complained of. Quite suddenly, petechiæ, some very small, some as large as a split pea, appeared under the cuticle, and were rapidly scattered over the whole surface; their colour was livid, and they soon became black as ink. After the lapse of a few days dark grumous blood began to ooze from the gums, from all the points of junction of the internal and external skins, and from the nares, and appeared mixed with the urine and fæces; patches of ecchymosis stained the skin over large spaces. The debility, vascular and muscular, was extreme, and the fetor emanating from the breath and whole person in the highest degree offensive. All signs of scarlatina vanished.

In this miserable state, with a gradual augmentation of every worst symptom of purpura hemorrhagica in its most malignant form, he lingered on for nearly three weeks.

For many days before death the following remarkable phenomena manifested itself. Blood oozed and descended in streams from the pores of the skin of the face, and, of all the external skin from those of the face only. With intense interest I watched the process. The surface having been wiped clean, minute globules of dark blood were seen to exude from every pore; these rapidly increased in size, coalesced, and formed streams which flowed on every side; a profusion of blood was thus extravasated, in like manner as drops of rain increase in size in descending, unite, and form tortuous little rivers, on the glass of the window of a carriage.

Whether attributable to the great tenuity of the Schneiderian membrane, connected with the delicacy of the sense of smell, or to the highly vascular net-work of this membrane, or to the copiousness of the supply of blood to the brain, or to all unitedly, certain it is, that of all the hemorrhages, that most frequent of occurrence is epistaxis.

To this variety of hemorrhage some are much more prone than others, and this may depend not only on constitutional

causes, such, for example, as mal-organized blood, but also upon superior delicacy of the mucous membrane and its vessels; a condition of mucous membrane, as well as of external skin, frequently characteristic of struma. Whatever be the cause the fact is certain, that blood streams from the nares with more facility than from any other mucous surfaces.

This is the case, in varied degrees, at every period of life, but much more remarkably so at the extremes of life; the most frequent time of occurrence of epistaxis is, however, during the period of growth. I have many interesting cases recorded which prove that this hemorrhage, having appeared in early youth, disappears during mediæval life, and returns as years accumulate and old age approaches. The period of senility varies much in differently constituted individuals, and is hastened or retarded by the events and habits of the past life.

It is a curious fact that the epistaxis of the growing period of life should, in so many instances, resume its sway towards its close. It may be termed the *Epistaxis redux* of advanced age. Within the last few days I attended a lady, now in her seventy fourth year, affected with severe hemoptysis. Thrice before, several weeks having intervened, she was similarly affected, and twice previously to the attacks of hemoptysis, she bled profusely from the nose. Inquiry elicited the following facts: In early life, antecedent to the full establishment of the catamenia, she had been a martyr to idiopathic epistaxis; at the menstruating periods she suffered habitually much pain, and the discharges were very profuse, and at the period of the cessation of the menses, when they recurred at long and irregular intervals, the hemorrhage was excessive, and the blood came down in large clots. She had been married at a young age, but had never been pregnant. This old lady does not appear to labour under any organic disease; the heart's action and the breath sounds are perfectly normal. I have on record several equivalent cases.

Considering, then, the facility with which blood is exuded from the nares, it is not contrary to anticipation that mental emotions should so affect the vessels of the brain, as frequently to give rise to epistaxis. Congestions, inflammations, and diseases of the brain, are frequently preceded and accompanied by epistaxis; this I shall have occasion hereafter more particularly to notice. Those mental emotions which produce cerebral congestion (for some, not all, produce this effect), are often signalised, and relieved too, by a flow of blood from the nares. Epistaxis is thus often a naturally provided safety valve. The following event, of which I happened to be an eye-witness, illustrates this principle. A child of some two and a half or three years of age, in attempting to descend a flight of stairs,

fell, and rolled down to the first landing place. He was much hurt, and cried bitterly. The nurse, a strong plethoric woman, greatly attached to the child, ran to take him in her arms; the child's father, at the head of the stairs, sternly forbade her to touch him; she was compelled (standing at the foot of the stairs) to look on. Another attempt (after many efforts and touching appeals for help) was made by the child to descend. Again, he fell. The nurse could endure it no longer; her feelings overpowered her. She rushed up stairs and took him in her arms, and exclaimed, in a highly excited tone, "If it cost her her life she would save the child." She became deeply flushed, and a copious stream of blood rushed from both nostrils. This woman, whom I had frequent opportunity of afterwards seeing, had never been subject, previously or since, to any form or variety of abnormal hemorrhage. This was a well-marked instance of a strong mental emotion causing epistaxis of temporary origin, and altogether exempted from any pre-existing or hereditary hemorrhagic diathesis. I shall, on a future occasion, notice how frequently this diathesis, connected with struma, is hereditary.

A lady, in her fortieth year, of florid complexion, and uncontrolled temper, in a fit of furious and unrestrained anger, was seized with epistaxis. Blood from both nostrils flowed in profusion, and persisted so long that her family became seriously alarmed. When I saw her she was nearly pulseless; there was a death-like pallor present, and a cold, clammy, perspiration; her voice was feeble, and she could articulate only in a whisper, yet she did not appear to be alarmed. There was no time to be lost; much blood still flowed; much descended from the posterior nares, and was swallowed; some hours previously she had vomited blood. Antecedent to my visit, all the usual means to check the blood-flow had been in vain employed. Upon close examination it was ascertained that the flow of blood was much more profuse from the left than from the right nostril; by means of a flexible catheter passed along the floor of the nose, a plug, with a strong silk thread firmly attached, was through the mouth introduced into the left posterior nostril. This completely controlled the blood-flow at that side; as it was not desirable too suddenly wholly to arrest the bleeding, the other nostril was not plugged. The loss on the right side became now comparatively small.

So much distress, so many unpleasant consequences have occasionally arisen from the plugging of both nostrils, that, whenever practicable, one of the air passages should be left free. The double plug is often needlessly applied. Sometimes, however, it is unavoidable. It may be well to remark, that if sponge be used for a plug, it is better to enclose it in lint,

otherwise when distended by moisture, it may so insinuate itself into the narrow spaces between the delicate bones of the nose, as to cause difficulty and even injury in its removal.

Months elapsed ere this lady recovered in health, strength, and complexion, from this profuse and prolonged nasal hemorrhage. In early life she had been subject to idiopathic epistaxis; her menses were always superabundant, sometimes extremely profuse. At each of her confinements her losses of blood were enormous. About a week before the attack of epistaxis she had menstruated copiously. Her habits of life had always been temperate. Thus in this case, a fit of anger, or rather of fury, was the exciting cause of the epistaxis. But its dangerous profusion is to be attributed to the pre-existence of a well-marked hemorrhagic diathesis.

The leading facts of another somewhat similar case shall be briefly detailed.

Mrs. S., aged 49, has ceased for a year and a half to menstruate. She is now labouring under organic disease of the heart. The symptoms indicate the existence of contracted orifice of the mitral valve. She has had two severe attacks of rheumatic fever, one before puberty, one at the age of 26. Eight years have elapsed since she first complained of dyspnœa and palpitation. Thirteen years ago she sustained a severe mental shock, by the sudden and unexpected death of her mother, to whom she was fondly and devotedly attached; the more, perhaps, because, though long married, she was childless. The mental emotion produced by the suddenly imparted news of her mother's death was very great, she was seized with violent headache, which was followed by most profuse epistaxis; for three days the hemorrhage never ceased. She lived in a remote part of the West of Ireland, and it was not until the fourth morning after the commencement of the attack that the physician reached her house; he found her pulseless, and apparently dying. He plugged both nostrils; she was unable to articulate, and with difficulty could swallow; she lay for upwards of three weeks in a state of insensibility; this period of time was a blank in her existence. She slowly recovered, but her natural complexion, vigour, and strength, she has never since then repossessed. In her case it is especially remarkable that, from the earliest age up to the full period of puberty, she had been subject to idiopathic epistaxis, so much so as to interfere with all her girlish amusements and occupations. The flow of blood was never during her early life profuse, but occurred so frequently, sometimes spontaneously, sometimes from the slightest causes, that she lived in a state of perpetual apprehension. When the menses were fully established the epistaxis ceased, and did not again recur till, as related, a powerful men-

tal emotion recalled the latent predisposition, and accounted for its all but fatal persistence and profusion.

In the pages of history we meet with several instances of hemorrhage produced by the most overwhelming of mental influences, wounded pride, thwarted and disappointed ambition. A Doge of Venice burst, as is narrated, a blood-vessel, and died suddenly, when he heard the bell of St. Mark's announce by its toll the appointment of his successor. At Salisbury, the perverse, mentally blind, and unfortunate monarch of England, James II., was, on the eve of an expected battle, which he never fought, seized with epistaxis. It continued, and confined him to bed for three days.

The influence of augmented heat or caloric upon the cerebral circulation, becomes a frequent cause of temporarily excited epistaxis. Hence it is that, at the hottest seasons of the year, hemorrhages in our climate are most frequent. Hence also it is that an overheated bath, heated rooms, indulgence in ardent spirits, the sun-stroke, violent exercises, so affect the circulation that hemorrhages oftentimes immediately ensue. Intense thought, long persisted in, renders the vessels of the brain turgid, and gives rise to a blood-flow.

Hence, too, the great imprudence and injury of ordering those patients threatened with phthisis, who evince the hemorrhagic diathesis, to overheated and dry climates; those who labour under what I have elsewhere termed hemorrhagic phthisis should never be sent to a climate which tends directly to augment the existing and often fatal evil.

Those causes which suddenly excite and stimulate the heart's action, so as to propel blood more rapidly to the brain, do, in many persons, give rise to epistaxis. In fevers, at the commencement of the stage of reaction, this is especially and strongly exemplified. A flow of blood from the nares is the starting-point of many fevers, of none more frequently than the Rebeolous.

Some months since I happened to attend two boys, each about ten years old, in the same room. They were playfellows and companions, but not relatives. I was much struck by the contrast between these two cases. One possessed a sound constitution, free from any hereditary taint, and had never been affected with idiopathic epistaxis. The other had not long recovered from a tedious and prolonged succession of strumous abscesses of the cervical glands, which left characteristic and deforming scars and cicatrices. From infancy he had been prone to distressing and perpetually recurring attacks of epistaxis. Twice the blood-flow was seriously profuse. Both these boys were attacked, within a few days of each other, with measles. At the time when the rash was beginning to appear

they both complained of headache, and they both bled from the nose; the boy with untainted constitution had no recurrence of the bleeding, was greatly relieved by it, and passed through the disease without one untoward symptom; the boy who was marked with the signs of struma (both his parents were intensely strumous) during three days bled so frequently, so copiously, that his life was endangered. The former was in a few days perfectly restored; but months elapsed ere he who was marked with struma resumed his former ruddy and deceptive appearance of health.

Thus were evinced, in strongly contrasted relief, the temporary and salutary epistaxis of a perfect constitution, and the protracted and exhausting epistaxis of the distinctly impressed strumo-hemorrhagic diathesis.

Here it may be noticed how very distinct the hemorrhage of incoming fever is from that which takes place towards it close. Epistaxis is the most frequent variety of bleeding during the hot stage; intestinal, sometimes uterine, when the fever is advanced; and when, at this stage, it, or any other variety of hemorrhage, sets in profusely, it is a most formidable symptom, and indicates the great change which has been wrought by continued febrile action in the component ingredients and constituency of the blood. At the ingress of the reaction of fever no material change has as yet been produced; towards the close the blood has been thinned and altered.

Of all the signs of the febrile movement the most invariable is wasting. No matter what the type, this is the most uniform result. Scanty are the supplies; the primary assimilative function is, in a great measure, suspended; so must be that of sanguification. The body feeds upon itself: as fever progresses, the blood becomes more and more attenuated; and in those fevers which are caused by malaria and by animal and other poisons, the blood becomes so deteriorated, so reduced in tenacity and density, that it oozes and is exhaled from mucous surfaces. Thus a passive hemorrhage is produced, altogether distinct from the active hemorrhage which so frequently, at the incoming of fever, relieves the tension and increased action of the vessels of the brain.—*Medical Press and Circular, March*, 20, 1867, *p.* 267.

23.—ON THE DIAGNOSIS OF OBSTRUCTIVE MITRAL BY A PRESYSTOLIC BRUIT.

By Dr. Peacock.

[The following is an abstract of a paper read by Dr. Peacock before the Hunterian Society.]

Dr. Peacock stated his former disbelief in the existence of any such murmur, except, it might be, in rare cases, but subsequent inquiry had led him to modify his views to a considerable extent. He narrated a case in which he had been able to make out a distinct presystolic bruit during life, and on examination after death he found well-marked mitral constriction, together with vegetations on the auricular surface of the valves. In the lungs a number of apoplectic kernels of various ages were discovered. Dr. Peacock had found these bruits to exist either with or without a systolic murmur, but, in some cases, and especially when associated with the last, their detection was very difficult, and the diagnosis of mitral obstruction by physical signs alone uncertain. It might, however, be made out by the fact that the burden of the work was thrown upon the right side of the heart, which beat louder than usual, by the tremor which sometimes accompanied the contact of the apex of the heart with the side, and by the pulse, which, as the left ventricle was unaffected but the supply of blood limited, was small and quick, but regular. The condition of the lungs is also different; the onset of the disease being more gradual than in regurgitation, the pulmonary capillaries have time to distend; hence the dyspnœa is less. There is less general venous engorgement, so that there is less dropsy, and that mostly in the lower extremities; the face is also usually paler. The prognosis is better than in mitral regurgitation, although in neither did he consider it so bad as was sometimes stated, and in both it was better than in aortic regurgitation. The treatment of the two mitral affections was rather different. In the case of obstruction, the patient was usually anæmic, and the circulation was with difficulty maintained; therefore tonics, especially chalybeates, were specially indicated. In regurgitation, again, the symptoms were generally more urgent, and the accumulated fluid had to be removed by diuretics or cathartics. Some patients lived a very long time with contracted mitral, especially young people who might have been born so, or acquired the condition soon after birth. As for himself, he was inclined to believe that rheumatism as a cause of heart complaint had been over-estimated.—*Medical Times and Gazette, Feb.* 2, 1867, *p.* 131.

DISEASES OF THE ORGANS OF RESPIRATION.

24.—WHAT IS TUBERCLE?

By the Editor of the Medical Times and Gazette.

[The following article was elicited by a debate at the Pathological Society, on the evening of the second of April.]

Originally, of course, the word tubercle bore with it no distinct meaning beyond the idea of a small tumour; but Laennec, applying it to the diseased condition so often encountered in the lungs, spoke of tubercular granulations and infiltrations, in the latter term departing entirely from the original idea of tubercle, beside bestowing upon it a character of specificity. What then was this specific product, for there were and are recognized two varieties of tubercle—the grey or miliary, and the yellow or crude? According to Bayle, the grey granulations were non-tubercular; Laennec, on the other hand, regarded them as essentially so—in fact, the invariable precursors of the yellow or crude variety of tubercle; whilst most moderns look upon them as the only correct representatives of that substance. Until lately Laennec's view has been the one accepted in this country, yellow tubercle being looked upon as the ultimate result of the miliary, although by many the cheesy stage was accepted as a starting-point for the interpretation of the whole process of tuberculisation. Miliary tubercle was supposed to be the result of inflammation and consequent exudation, but, the blood being vitiated and the constitution depraved, the effused product assumed this imperfect form instead of that ordinarily investing healthy lymph. The granular tubercles thus formed were supposed to be incapable of reproducing themselves, having no power of cell formation, and consequently only increasing by accretion. They involved none of the surrounding tissues, only appearing to affect them as any foreign body would, whilst, being gifted with but a lowly organisation, they were extremely liable to degeneration. In this way the large cheesy masses encountered in the lung were supposed to be produced, and these masses were by many accepted as the true representative of tubercle. Still, till recently, no one doubted the accuracy of the views just cited, but two great blows were struck, and the stability of these doctrines, thus roughly tested, was found to be deficient. Probably the first of these in point of time was the discovery that the cheesy mass constituting crude tubercle was very far from being invariably of a tuberculous nature; in fact, after a certain stage, it could not be made out whether the mass had been originally tubercular, or was the degenerate remains of pus, cancer, sarcoma, or pneumonic deposits. The other was Virchow's discovery of the history of tubercle, and his tracing it through all its stages, from its earliest origin in connective-tissue cells, to its final softening and expulsion. By the former, the unfailing certainty with which any cheesy mass encountered in the lungs or elsewhere was pronounced tubercular, was rudely dispelled; by the latter the inflammatory and exudative origin of tubercle was treated in a similary summary manner.

an a further consequence of the discovery of the essentially cellular nature of tubercle, its type is no longer sought for in its commonest situation, the lungs, but in other organs whose constituents are of a less perplexing character—as, for instance, in serous membranes. There the proliferation of badly formed and nourished connective-tissue cells may be readily observed, their products assuming that shrivelled, unwholesome, and granular aspect seen in tubercle. One situation seems to be peculiarly well adapted for examining the growth of tubercle—that is, the lining membranes of the skull and coverings of the brain; yet many French observers, including no less an authority than Robin, hampered by the old notions as to the cheesy nature of tubercle, refuse to accept the bodies produced there as tubercular. Recent researches by Dr. Bastian as to the origin and growth of tubercle in that situation would seem to prove that meningeal tubercle does not originate from connective-tissue corpuscles, but rather by the excessive proliferation of the epithelial cells and nuclei lining a series of peri-vascular canals which have been demonstrated by His to surround the vessels of the brain and meninges. There the process of proliferation goes on at an increased rate, but for want of proper nourishment the cells become worse and worse formed, and their contents more and more granular, until the mass almost entirely loses its cellular character. There is no exudation, but the deteriorated quality of the blood influences the process so far as to give rise to a granular instead of a cellular product. Is this, then, inflammation? Essentially it is, for according to the doctrines of the new school inflammation only consists in excessive proliferation of cells, accompanied by certain manifestations of local and general disturbance.

But of late the matter has assumed an entirely new aspect by the experiments of M. Villemin. Investigating the history of tubercle, and seeking some more satisfactory information as to its origin than had hitherto been given, M. Villemin was induced to try the effects of inoculation. A small quantity of that substance was introduced into a little wound behind the ear of a rabbit, and the opening closed. When examined, tubercle of the grey or miliary kind was found in various parts of the body, particularly in the lungs. The experiments were repeated again and again, but in all cases with a like result, and M. Villemin came to the conclusion that tubercle was thus transmissible from one being to another. Other experimenters came forward, among them the famed Lebert, who also confirmed Villemin's results. The attention of many of our indefatigable pathologists being thus drawn to the investigation, they, being far from satisfied with the accuracy of the experiments, resolved to undertake fresh ones for themselves. Among others, Mr.

J. Simon and Dr. Andrew Clark had been working at the subject, and both laid their results before the Pathological Societyt In some very important particulars Mr. Simon's results differ from those of previous investigators. Thus he made use of yellow or crude tubercle, a product which, as we have already seen, is of by no means a certain origin ; even of this he used but a very small quantity, which was introduced into a wound of, comparatively speaking, a small size; further, the substance produced possessed more of the characters of crude than of miliary tubercle, and this was found in various parts of the body.

Dr. Andrew Clark had made use of grey tubercle, and had succeeded in producing something resembling grey or miliary tubercle, but which he maintained had altogether a different structure, being distinctly cellular in its texture and having characters identical with the products of lobular or epithelial pneumonia. This product, he maintained, had not the same destructive influence on life as tubercle in the human subject had, and as to its being miliary tubercle, the eye alone was not a sufficient test. But by far the most important point was that *he had been able to produce similar matter by inoculating with substances of a non-tuberculous nature*, as cancer and pus. Further, he argued, were tubercle so readily transmissable, why did we not more frequently find the husband infect the wife, and *vice versa?* And so the matter rests.

Shortly, the facts may be stated thus:—The true or miliary form of tubercle seems invariably to originate by the proliferation of certain cells, the products, from the vitiated condition of the blood, being more or less imperfect (Virchow, Vulpian, Bastian). Some local stimulus is, however, wanting in addition to the ordinarily deteriorated state of the constitution, and this may be supplied by the introduction of miliary tubercle (Villemin, &c.), by crude tubercle (Simon), or other morbid substances (Clark) into the system. The products of the cell proliferation would seem, however, probably from the healthy condition of the animal, to possess more of a cellular and less of a granular character than in man (Clark). It is obviously foolish to talk of the product of Mr. Simon's experiments as crude tubercle—a decaying or degenerating substance; it may have been of the nature of miliary tubercle originally, or it may not; but to suppose that this half-dead matter was the *immediate* result of introducing other half-dead matter into the system is absurd.

Stripped of all garnishing, these are the facts. As yet they are too scanty in number to allow of any extensive generalisation; but the field is now filled with able and willing workers, and we hope that before long the veil will be raised still further,

and we shall have a nearer insight into this most interesting morbid process.—*Medical Times and Gazette, April* 20, 1867, *p.* 414.

25.—ON GOUTY BRONCHITIS.

By Dr. E. Headlam Greenhow, Assistant-Physician to the Middlesex Hospital.

[In a large proportion of cases bronchitis is a secondary, not a primary disease. There is evidently some relation between the gouty diathesis and bronchitis; for out of ninety-six cases of the latter a distinct gouty history could be traced in thirty-four.]

A more minute investigation of the facts bearing on this subject will now, however, be desirable. First, then, as regards the patients themselves, I find that no less than fourteen were subject to attacks of acute regular gout as well as to bronchitis, and that in nine of these cases gout co-existed with the bronchitis while the patients were under my care. Eleven others had suffered from chronic gout attended by the formation of chalk-stones, or from what has been called rheumatic gout. I am indeed aware that some of our most eminent authorities consider regular gout and rheumatic gout as entirely different complaints; but I have so frequently seen rheumatic gout in persons some of whose immediate relatives suffered from regular gout, that I have no hesitation in regarding them as at least closely allied diseases. In the cases of nine other patients who had not themselves shown any symptoms of gout, it was ascertained that near relatives, such as parents, brothers, or sisters, had suffered from that disease; and this number, probably, by no means represents the true proportion of such cases, for, as you will remember, the family history could not be made out in much more than half the ninety-six cases analysed. These three numbers, however, fourteen, eleven, and nine, make up the thirty-four cases which I mentioned as showing the intimate relation between a gouty constitution and chronic bronchitis. The evidence on this head is, I think, strengthened by the fact that, in many instances, while some members of the patients' families had gout, others had bronchitis, and others again suffered from both complaints. Confining myself strictly to those cases in which there had been acute regular gout, I clearly ascertained the existence of both gout and bronchitis in ten of my patients' families. Thus in one instance two near blood relatives of the patient were subject to gout, and one other as well as the patient to bronchitis; in another case, three were subject to gout, and one to bronchitis; in a third family, one

member had suffered from gout, and five from bronchitis; and in a fourth, two from gout, and three from bronchitis. In five other of the ten families, at least one member had suffered from both gout and bronchitis; the patient under my care being, of course, in all cases excluded from the reckoning, and no two of the cases included in my analysis having been members of the same family.

It is, indeed, true that the gouty form of dyscrasia is exceedingly common, not only among private patients, but also among the working classes, and especially among the artisans of London, who frequent our hospital out-patient rooms. But, common as it is, gout constitutes, even when the regular, the irregular, and the complicated forms are all thrown into the calculation, a very much smaller proportion of the total number of our hospital patients than it does of the bronchitic class only. Hence I think myself justified in the conclusion, to which personal observation has also led me, that there really is the intimate relation between a gouty constitution and chronic bronchitis which I have frequently taught you, and that in many cases in which, from active and temperate habits or from some other cause, a hereditary tendency to gout has not been developed into the characteristic form of that disease, it has manifested itself in the form of chronic bronchitis

In further support of these views, I may mention that I have frequently known bronchitis and gout alternate; an obstinate attack of bronchitis subsiding on the occurrence of a smart fit of gout, and, though less frequently, *vice versâ*—bronchitis being developed on the subsidence of gout. I well recollect a striking example of this alternation in the case of an elderly man who was long under my care. His ailments were gout, psoriasis, and bronchitis, and he was rarely or never free from all of them. No two of the three ailments ever co-existed in his case; but it would happen that just as he was congratulating himself on having got rid of the gout, his skin would become covered with psoriasis, and this in a few weeks would take its departure, and be succeeded by an attack of bronchitis.

I have dwelt at considerable length upon this, as I am convinced, very frequent constitutional origin of bronchitis, because its recognition affords the clue to the successful treatment of the disease in many cases; and although it has been mentioned in express terms by Sir Henry Holland and several other eminent physicians, it has never, I think, been so prominently or specifically brought forward as to secure for it in ordinary medical practice the attention its importance deserves. I shall now proceed further to illustrate my remarks on this subject by reading to you several instructive cases, which I have selected from

among the number included in my analysis, and which may fairly be classed under the head of gouty bronchitis.

The first case is that of a man who was only a short time under observation, and whose family history I could not obtain; but I have chosen it as affording a more than usually obvious illustration of the relation between gout and bronchitis in an individual patient. In the greater number of cases the secondary character of bronchitis is to be inferred rather from the history of the case of the patient's family than from present facts patent to the observer; and I have endeavoured to make the relation between gout and bronchitis apparent to you, chiefly, by showing the very large proportion of bronchitic patients in whom, or in whose families, I have found a more or less definite history of gout. In many cases, no doubt, the gouty dyscrasia only produces a strong predisposition to bronchitis, and the disease is first developed by some external exciting cause, though frequently by a much slighter one than would be likely to produce the same effect in a healthy subject. In other cases, again, we find in gouty constitutions a certain degree of chronic bronchial irritation manifested by more or less constant scanty expectoration, which either merges slowly and almost imperceptibly, as life advances, into chronic bronchitis, or is more rapidly developed into it by exposure to vicissitudes of temperature or other immediate exciting causes. In the case I am about to relate, however, the patient had not only himself suffered from definite attacks of both gout and bronchitis, but he did not refer his bronchial symptoms to any exposure, and considered them as merely the sequelæ of his gouty attacks, which they immediately followed and appeared to supersede. This, in fact, occurred, as the following brief history will show, on occasion of the attack for which he came under my care :—

H. T——, aged forty-eight, a pallid, sallow-complexioned man, by occupation a tailor, was admitted an out-patient on the 12th of January, 1866. He stated that he had for several years suffered from occasional attacks of regular gout, always commencing in the ball of the great toe. After the gout he had also been subject to what he called asthmatical attacks, and during the previous winter had suffered for some time from cough. Somewhat more than a fortnight before presenting himself at the hospital he had been attacked by gouty pains in the knee, foot, and left elbow, accompanied by severe headache. In the course of a few days these pains had entirely subsided, except in the elbow, and simultaneously with their disappearance he had begun to suffer from cough and dyspnœa.

On admission, he complained much of the dyspnœa, especially on rising in the morning and on moving about, and said that the cough was attended by a copious, thick, white expectoration.

The left elbow was still hot, swollen, and tender; the skin was moderately warm; pulse 90; urine normal; the chest was everywhere resonant on percussion, indeed abnormally clear in both mammary regions, and posteriorly over the lower lobe of the left lung; the respiration was slightly laborious; the expiration prolonged, and loud cooing sounds were audible over both lungs; the cardiac sounds were free from murmur, but the area of cardiac dulness was increased, and the heart's impulse was more diffused than in the state of health. I gave the patient at first the compound squill draught during the day, and a pill consisting of two grains of the acetic extract of colchicum and three of Dover's powder each night at bed-time. Under this treatment he rapidly improved; the gouty symptoms in the elbow disappeared almost immediately, and the cough and expectoration soon greatly abated. He still, however, suffered from dyspnœa, and, as there is emphysema in both lungs, he will probably continue to do so more or less as long as he lives.

But I need not detain you with any further details of this case, which I have quoted only on account of its etiological importance, and will now invite your attention to another, which in one respect is precisely its converse. I have already told you that when gout and bronchitis are both developed in the same person, it frequently happens that the occurrence of a fit of regular gout relieves the bronchitis, and sometimes, though more rarely, that bronchitis makes its appearance on the subsidence of the gout. T.'s case, which you have just heard, exemplifies the latter and less common mode of alternation. The case I shall now read to you followed, as you will observe, the former and more usual course.

Alfred B., aged 49, painter, became an out-patient under my care Nov. 3rd, 1865. He was a tall, stout man, with a broad capacious chest. His family history showed a strong tendency to bronchial affections, and also a gouty taint; his father, mother, and brother having died, he said, of asthma, which evidently meant chronic bronchitis and its consequences; whilst two living brothers suffered from the same disease, and another from gout. He himself had frequently had gout, most commonly in the knees, but also in the toes, wrists, and elbows. Said he was a moderate man, drinking only beer to the amount of two or three pints a day. Had been subject to chronic cough in winter for seven or eight years, and was very liable to take cold even in summer, but did not attribute his ailments to any special exposure.

On admission he was suffering from dyspnœa and cough, attended by a scanty, thick, white expectoration. His face was puffy, tongue fairly clean, pulse 90. The chest rose evenly in respiration, and was equally and normally resonant on percus-

sion on the two sides. The respiration was slightly laborious. The breath-sounds were normal over the upper and anterior part of both lungs, but mucous crepitation was audible in the lowest part of the right lung. Posteriorly, the percussion resonance was perfectly normal over the base of both lungs; but cooing rhonchus, intermixed with moist crepitation, was heard from the base upwards as high as the angle of the scapula on both sides. The heart-sounds were normal in character and position. The urine was high-coloured, acid, and contained no albumen. I prescribed the compound squill draught of our hospital Pharmacopœia, with twenty minims of tincture of henbane, to be taken every six hours; and a pill for night, containing one grain each of blue pill and ipecacuanha powder, with three grains of powdered rhubarb.

At the end of a week he was very much better, and the report in the Case-book on Nov. 14th is that the cough was much diminished and the expectoration had become more scanty. The chest was everywhere normally resonant on percussion; and the breath-sounds were normal, with the exception of slight sibilus and scanty mucous clicking in the base of both lungs. But at this time gouty symptoms were making their appearance, and in a few days a regular fit of gout came on, during which the cough entirely disappeared.

This is, in brief, the history of a mild case of gouty bronchitis, in which the bronchial affection was evidently relieved by th occurrence of the gouty paroxysm. The case was comparatively so slight a one, and the patient when he first came under my care was so entirely free from any gouty symptoms, that I did not then deem it necessary to resort to any specific treatment for the constitutional taint. I have therefore read it to you, not with reference to that branch of the subject, but merely as another illustration of the intimate relation between gout and chronic bronchitis, shown in this case not only by the alternation of the two diseases in the individual patient, but also by the appearance of one or other of them in so many other members of the same family.

I will now give you the history of another case, still under observation, which I have had the opportunity of watching at intervals during a long period.

George S——, aged fifty-nine, married, a hat-maker by trade, first became an out-patient under my care on the 23rd of October, 1863. He then stated that he had for many years been subject to cough and expectoration with dyspnœa, in summer as well as in winter, as much in hot as in cold weather. A medium temperature suited him best, extremes in either direction always increasing his ailments. Had had regular gout twenty years ago, and said that he was in the habit of suffering from time to time

with gouty pains in hands and feet, but was free from them at the time of his admission. Was subject also to occasional psoriasis. Allowed that he was a beer-drinker, though, he said, only in moderation; but many years' observation has led me to the conclusion, in common with the late Dr. Todd, that to no circumstance is the prevalence of gout among our London artizans more attributable than to the large habitual consumption of malt liquor by this class of persons. The patient himself referred his complaints to exposure to vicissitudes of temperature during his work; but the appearance of the gout having in his case preceded that of the bronchial affection, and the attacks of bronchitis having been accompanied or followed by gout on three out of the four occasions on which I have seen him, we may reasonably assume that the alternations of heat and cold to which he was exposed, had been, at most, only the immediate exciting causes of irritation in a bronchial membrane already predisposed to disease by existing constitutional ailments.

When admitted, G. S. was suffering from a pretty severe attack of bronchitis, attended by much dyspnœa and by a copious frothy expectoration; but he said that this latter, although he was never altogether free from it, any more than from cough, consisted only, during the intervals between the more acute attacks, of a small quantity of thick, transparent, bluish mucus. Now this is the exact counterpart of what we meet with every day in bronchitic patients, more particularly in those who have also a gouty constitution. They habitually raise in the early morning, and it may be also at rare intervals during the day, little pellets of tenacious, bluish, starch-like mucus, sometimes studded with darker specks. This ailment, which may perhaps be almost too slight to attract the patient's attention, is quite compatible with good health in all other respects, but is nevertheless proof of an abnormal condition of the bronchial membrane. In the healthy state, only just as much fluid is secreted by the bronchial membrane as is necessary to keep it soft and moist enough for the due performance of the function of respiration. We may therefore safely assume, as a rule, that wherever there is bronchial expectoration, however small in quantity, the membrane is not in a perfectly healthy state, and is consequently far more liable than a membrane in the normal condition to suffer from immediate exciting causes of bronchitis of whatever kind.

To return, however, to G. S. I should tell you that he was treated successively with our compound senega draught, and with nitro-muriatic acid in combination with tincture of gentian, ipecacuanha wine, and tincture of henbane. On the 11th of December the Case-book reports him as in all respects greatly improved; and he was discharged comparatively well on the

16th of January, 1864. But he was readmitted on the 6th of May of the same year, suffering from gout in the fingers of the right hand, and also from cough, attended by the white, frothy, mucous expectoration characteristic of recent bronchitis. There was now, also, slight œdema in the ankles; but the urine was free from albumen. The chest was found on examination to be normally resonant on percussion; sibilus and rhonchus were more or less audible throughout both lungs; the expiration sound was prolonged, especially in the upper lobes; and mucous crepitation was heard in the base of the right lung. Taking into consideration the mixed character of the illness—showing the actual co-existence of gout and bronchitis—I prescribed a combination of medicines calculated to meet both aspects of the case: that is to say, I gave him four grains each of iodide of potassium and sesquicarbonate of ammonia, ten minims of wine of colchicum, and twenty minims each of tincture of squills and tincture of hyoscyamus in an ounce and a half of camphor mixture, three times a-day, together with five grains of the compound conium pill every night. This is a plan of treatment which, modified according to circumstances, I have often found very serviceable in similar cases, and under its use G. S. gradually improved; but at the end of a fortnight, his appearance being anæmic, a grain of sulphate of iron was substituted for the ammonia in the draught. The gout soon disappeared; but the mucous crepitation in the base of the lung still continuing without change, I ordered a draught containing twenty minims each of tincture of sesquichloride of iron and tincture of hyoscyamus, with ten minims each of ipecacuanha wine and diluted hydrochloric acid in peppermint water, to be taken three times a-day. My patient now recovered rapidly: but continued under occasional observation till the month of August.

He did not present himself again until the 5th of May, 1865, when, curiously enough, at the exact interval of one year from the date of his previous admission, he was readmitted under my care in an almost identical condition. The finger-joints were again swollen and painful, and he was suffering in the same manner from cough and dyspnœa. The bronchitis, however, was in a more advanced and chronic state, the expectoration being now thick, opaque, and muco-purulent, instead of glairy and frothy as on his previous admission. He was treated in a similar manner, but improved more slowly than the year before. The cough varied from time to time; but, though better on the whole, was by no means well, when, towards the end of June, with the accession of hot weather, he was attacked by gout in a more pronounced and regular form, affecting successively the balls of both great toes, the ankles, and fingers, and being uniformly worst on the right side. On the appearance of gout in

this acute form the cough and expectoration at once abated; and I then ordered him a draught containing one grain of sulphate of iron, five grains of iodide of potassium, fifteen minims of wine of colchicum, and one drachm of glycerine in peppermint water, three times a-day; with a pill at night consisting of two grains of acetic extract of colchicum and three of Dover's powder. He continued this treatment, with some modification, for a month, and was discharged quite well on the 4th of August.

The relief, however, on this occasion was not of long duration, for on the 5th of December he applied for readmission, and still, after two months, continues under treatment. His cough had returned, with much wheezing and dyspnœa, and with the frothy, transparent expectoration I have described as characteristic of recent bronchitis. His skin was cool, pulse 90, but quite regular. The sides of the chest rose evenly in respiration, and were equally and normally resonant on percussion. The heart-sounds were normal The respiration was somewhat harsh below the right clavicle; feeble generally over the front of both lungs. Rhonchus and sibilus were audible over the lower lobes of both lungs posteriorly, intermixed with faint mucous crepitation in the base of the left lung. The urine was normal. At this time he quite free from gouty pains, and I ordered him our compound squill draught, with twenty minims of tincture of henbane, every six hours; but, bearing in mind his gouty tendencies, I added the night-pill of colchicum and Dover's powder which he had taken before. He has improved greatly as regards the cough, and the expectoration has much diminished, and has become opaque and of a bluish colour, but the subsidence of the bronchial affection has again been simultaneous with the development of gouty symptoms in the joints, though of a less decided character than on the last occasion,—this difference being probably due to the specific treatment the patient had been undergoing before their appearance. In addition to the night-pill he is now again taking the iodide of potassium, with ammonia and colchicum wine.

You will observe that in this case the interval between the last attack and the present one was shorter than that between the last attack and the previous one. This is very apt to occur in gouty affections, the attacks of which usually tend to become both more frequent and more obstinate on each successive recurrence. It is, indeed, supposed by some physicians that the use of colchicum as a remedy for gout, although it mitigates and shortens the existing paroxysm, indirectly favours the increasing frequency and severity of the attacks; and by these authorities the shorter interval between the latter attacks in G. S's case would probably be set down to the employment of that drug,

which, as you will remember, was administered to him. In this view, however, I by no means concur. I have found colchicum a most valuable remedy in the treatment of gout, provided that it be used in moderation, and persisted in for a sufficient length of time; and provided also that the diet and habits of the patient be properly regulated, not only during the actual attacks of gout, but also during the intervals of comparative health. It is, however, peculiarly difficult to regulate the habits of hospital out-patients. and I strongly incline to believe that this man, although he strictly followed the directions as to medicine, generally disregarded my injunctions as to diet and abstinence from malt liquor. Moreover, he continued to work at his occupation as long as possible before laying up, and resumed work again as soon as possible after an attack of illness, and therefore was never for more than a short time exempt from the exposure to vicissitudes of temperature which no doubt tended, more or less, to excite the frequent exacerbations of his bronchitic symptoms, although not, in my opinion, the original or even the principal cause of them.

[The fact of the frequent occurrence of psoriasis and eczema in cases of chronic bronchitis forms a visible link between the latter disease and gout, in which also the occurrence of psoriasis and eczema is common.]

That these eruptive diseases are, at least for the most part, of constitutional and not of local origin, has been recognised by some of the best observers and highest authorities in the profession. Sir Thomas Watson, in his classical work on the "Principles and Practice of Medicine," when speaking of lepra and psoriasis as closely allied diseases, says, with respect to the former, that it is a blood disease depending upon some poison introduced from without, or more probably bred within, the body; and, with respect to both these forms of cutaneous disease, that he believes they sometimes depend upon the presence or the generation of an excess of acid in the system. This exactly accords with the opinion I have expressed concerning the frequent relation of psoriasis and eczema with a gouty constitution; for gout is undoubtedly a blood disease, dependent upon the presence of uric acid, a poison bred within the body. Moreover, the existence of this relation has been pointed out, in more or less positive terms, by Sir Henry Holland, Dr. Garrod, and others. Sir Henry Holland says, in his eminently suggestive work, "Medical Notes and Reflections," that he has "so often seen psoriasis prevailing in gouty families—sometimes alternating with acute attacks of that disease, sometimes suspended by them, sometimes seeming to prevent them in individuals thus disposed,—that it is difficult not to assign the same morbid

cause to these results;" and Dr. Garrod mentions, in his book on Gout, that several instances of skin disease in connexion with gout have come under his observation, and amongst them cases of chronic eczema and psoriasis, which have either alternated with, or accompanied, regular articular gout. He also relates the case of a gentleman who a few months after the disappearance of gout was attacked by an eruption of eczema which resisted arsenical treatment, but yielded readily to remedies adapted to the cure of gouty inflammation.

The relation, therefore, as you will have already inferred, which I believe to subsist between bronchitis, the subject of our present consideration, and psoriasis or eczema is that, when the bronchial and cutaneous affections exist in the same individual, they are due to one and the same constitutional cause, and that this cause is most frequently a gouty condition of the system. Further, you will easily understand that I have brought this relation so prominently forward, not merely because bronchitis was associated with psoriasis or eczema in a considerable number of my patients, but also because I believe that the presence of either of these diseases, in a person suffering from chronic bronchitis, affords strong presumptive evidence, in the absence of any syphilitic taint, of the existence of a gouty dyscrasia giving rise to both ailments, and may therefore often serve as an auxiliary guide to the diagnosis and treatment of the case. The alternative to which I have just alluded—that is to say, the occasional syphilitic origin of psoriasis in bronchitic patients, and indeed in such cases of the bronchitis also—is as a rule, easily ascertained, and I believe it to be much rarer than the gouty origin of these diseases, on which it is my present object to fix your attention. The case of a private patient now under my care affords a better example than any of the cases included in my analysis of the occurrence of constitutional psoriasis together with chronic bronchitis in a person of gouty family, but who had never himself suffered from gout; and I may therefore describe it in a few words.

A gentleman, aged 42, consulted me first a few weeks ago, having suffered for ten years from dyspnœa and tightness of chest, and also from habitual morning cough attended by the expectoration of small masses of thick transparent mucus. These complaints had been gradually increasing from year to year, until latterly he had been more or less laid up with definite attacks of bronchitis every winter. He was always worst in cold, frosty weather; a damp, foggy atmosphere, provided it were mild, not appearing to affect him injuriously. On examination of his chest I found the physical signs of both emphysema and chronic bronchitis, and I found, also, that he was covered on the chest, shoulders, and back with psoriasis, from which he

had not been entirely free at any time during the last five years. He had never himself suffered from either gout or rheumatism, but I ascertained on inquiry that two of his brothers were subject to gout in the regular form.

Another ailment, frequently owing to a gouty state of the system, is sometimes found, like psoriasis, associated with bronchitis, in persons who have not themselves suffered from gout; and although no examples of it occur among the cases analysed, the fact appears to me to bear so strongly on the question of a gouty origin of chronic bronchitis in many cases in which there have been no actual symptoms of gout, that I shall give you a brief abstract of two cases from my private practice in which gravel—the ailment I speak of—alternated with bronchitis, and in one of the two with psoriasis also, in much the same way as the psoriasis alternated with bronchitis and gout in the case which has just been under consideration.

About a year ago I was consulted for a youth, aged 19, who complained of severe pain in the region of the kidneys. His tongue was clean, appetite good, bowels regular; in fact, he looked and felt in perfect health, with the exception of the pain in the back. On examining the urine, however, I found that it contained a large amount of sandy deposit, which fell to the bottom of the chamber utensil immediately on micturation, and did not render the urine turbid like the deposits which are thrown down in the process of cooling. Under the microscope this sand was seen to consist of minute angular crystals of uric acid, which I have already told you is the blood-poison present in gout. Under the use of alkaline and other appropriate treatment, including a strict regimen, the urine ceased to contain any gravel, and the patient entirely lost the pain in the back; but, after a short period of comfortable health, he returned to me suffering from a mild attack of psoriasis. This also yielded in a few weeks to treatment with arsenical solution, in combination with a large excess of potash; but was in turn soon followed by a tedious attack of bronchitis, immediately referable, it is true, to some casual exposure, but the predisposition to which, in my opinion, lay in the constitutional condition which had in the first place caused the gravel, and in the second the psoriasis. I was further confirmed in this opinion by the fact that, when I last saw the patient, at an interval after the attack of bronchitis, the gravel had reappeared in the urine, though in smaller quantity.

The other of the two cases to which I alluded was that of a gentleman aged 60, who came under my care in April, 1864, for a severe attack of subacute bronchitis, to which complaint he had long been subject in the chronic form. He had not been entirely free from cough for several years, and constantly

suffered much from dyspnœa. There was a considerable degree of emphysema, and, as might be expected in such circumstances, the illness was a tedious one. When, however, at length, the bronchial irritation abated, he began to pass large quantities of uric-acid gravel. He would give me at each visit four or five parcels of this gravel, put up like powders, containing from ten to twenty grains each. After a time he appeared to be cured of this ailment also, and he got into comparatively tolerable health, almost entirely lost his cough, and was considerably relieved from the dyspnœa. He went abroad, and I did not see him again till last summer, when he called on me, complaining of symptoms which pointed to the probability of a stone having formed in the bladder, and this indeed proved to be really the case. Meantime his bronchitic symptoms had remained permanently much less than for years before.

You will by this time fully understand that the true relation which I believe to exist between the chronic bronchitis and the gout, psoriasis, albuminuria, and gravel, in all these different cases which I have included under the head of gouty bronchitis, is that they all depend upon a common humoral dyscrasia, which in one case produces gout, in another gravel, in a third psoriasis, or, as in the cases which we have been considering, bronchitis co-existing or alternating with one or more of these other ailments. These are all, therefore, examples of one form of what in my last lecture I called secondary bronchitis—that is to say, bronchitis arising out of some internal condition of the system; that internal condition being, as we have seen, in all these cases, the existence of the humoral dyscrasia which is recognised as the cause of gout.

Regarding the treatment of this form of secondary bronchitis, it is clear from the necessarily complicated nature of the subject that I cannot pretend to give you any specific directions apart from the indications you will not have failed to gather from my own treatment of several of the cases discussed. The remedies appropriate to the bronchitis and to the other affections must obviously be varied and modified from time to time, in order to meet the constantly varying conditions of different patients, or of the same patient at different times; and this it is only possible to illustrate by means of examples, which might be infinitely multiplied if time allowed. The one essential point towards the successful treatment of all such cases is that you should constantly bear in mind the presence of a constitutional cause for the local affection, and not rest satisfied with directing your efforts towards the removal or alleviation of the bronchitis, but endeavour as far as possible to combat the dyscrasia which is the real source of the patient's ailment.—*Lancet, March* 9, *and April* 20, 1867, *pp.* 293, 479.

26.—ON PNEUMONIA.

By Dr. A. T. H. Waters, Physician to the Liverpool Northern Hospital.

[Discrepancy of opinion still exists with reference to some points connected with the morbid anatomy of the disease, such as whether the capillaries of the pulmonary artery or those of the bronchial arteries are the vessels which are involved in the disease, also, which particular part of the pulmonary substance is the seat of the disease.]

To refer briefly, to the arrangement of "the ultimate pulmonary substance"; viz., that which constitutes the respiratory portion of the lung. Each terminal bronchial tube has connected with it a number of elongated cavities or "air-sacs." These are separated from each other by thin membranous walls, on which are found a number of cup-like depressions, alveoli, or air-cells. The series of air-sacs connected with the extremity of each bronchial twig, with its system of blood-vessels, &c., constitutes a *lobulette*. Each lobulette is perfect in itself, and has no lateral communication with adjoining lobulettes. A varying number of these lobulettes constitutes a lobule. Each lobule is, in the human lung, surrounded by a strong sheath, which possesses a good deal of elasticity, and is further connected with adjoining lobules by means of a small quantity of areolar tissue. The union of a number of lobules constitutes a lobe.

The pulmonary arteries are the only blood-vessels distributed to the respiratory portion of the lungs; viz., the walls of the air-sacs. These arteries, as soon as they reach the termination of the bronchial tubes, give off small branches, or arterioles, which take their course along the walls of the air-sacs, and break up into a capillary net-work, which constitutes the so-called pulmonary plexus. As these vessels are the only ones which are found in the walls of the air-sacs, they must be engaged, not simply in carrying blood for the special function of the lungs, but also for the nourishment of the tissue to which they are distributed.

Although the bronchial arteries pass along the bronchial tubes, and supply the structures of those tubes and the areolar tissue of the lungs, they yet send no branches to the walls of air-sacs, which are solely occupied, as I have already stated, by the plexus derived from the pulmonary artery.

In speaking of the areolar tissue of the lungs, I wish it to be distinctly understood that no tissue of this kind is found in the walls of the air-sacs. These walls consist of a thin semi-transparent membrane, enclosing within it a quantity of elastic tissue together with the capillary plexus.

Areolar tissue is only demonstrable in the human lung, surrounding the bronchial tubes and the larger blood-vessels, and connecting the various lobules with each other. And although, as I have pointed out elsewhere, in the fœtal lung it is possible to separate each individual lobulette from those by which it is surrounded, no such separation can be made in after life; and my opinion is, that any areolar tissue which may exist at birth around the lobulettes becomes subsequently absorbed. At all events, if any remain, the quantity is so small that it cannot be demonstrated.

Such being the distribution of the blood-vessels of the lungs, and the arrangement of the areolar tissue, the next point for consideration is, the exact seat of the pneumonic inflammation.

On examining, under the dissecting microscope, a piece of inflamed lung which has reached the stage of hepatisation, it is at once seen that the seat of exudation is the air-sacs. These cavities are filled with solid matter; and, if the preparation have been kept in spirit for some time, moulds of the cavities can be drawn out. As the air-sacs are the seat of the exudation, it is obvious that the latter must be poured out from their walls. The structures composing these walls must, therefore, be the seat of the inflammatory process; and, as they contain no other vessels than those derived from the pulmonary artery, it is the branches of that vessel alone which are involved in the disease.

In a piece of hepatised lung, exudation is sometimes found in the smallest bronchial tubes; at other times it is absent from them, and merely fills the air-sacs. The presence of this exudation in the bronchial tubes by no means proves that it has been poured out from their lining membrane; for it may have passed into the tubes from the air-sacs, in consequence of the over-distension of the latter.

In some cases of pneumonic inflammation, there is no reddening of the mucous membrane of the finest bronchial tubes—no *post-mortem* appearances to show that there has been anything more than a simple uncomplicated inflammation of the air-sacs; whilst in other cases an increased vascularity of the bronchial membrane indicates the concurrent existence of bronchitic inflammation.

Some pathologists, in speaking of the morbid anatomy of pneumonia, have described the exudation as taking place in part into the "interstitial tissue." They have not, however, accurately described what they mean by "interstitial tissue"; and it is very important, in connexion with this disease, that clear notions should exist in reference to this particular point. I have already mentioned that the lungs are not permeated throughout by areolar tissue; and that it only exists in certain parts, and in small quantities. The true lung-tissue—that

which has been known as the parenchyma of the lung—consists of the walls of the air-sacs. These walls are firm and strong, but very thin. They consist of yellow elastic tissue, and a basement membrane inclosing the pulmonary plexus. No areolar tissue is found in these walls—a fact which a careful examination of the morbid appearances produced by pulmonary emphysema fully demonstrates; for in that affection the perforation of the lung tissue, which takes place, produces a lateral communication between the air-sacs, but no extravasation of air into their walls.

Although, in pneumonia, the walls of the air-sacs swell and become somewhat thickened, chiefly in consequence, I believe, of the enlargement of the capillaries which they contain—partly, probably, from the retaining of some of the serous fluid which exudes from those vessels—they are yet not the seat of anything like extensive exudation. Their structure is, in fact, such as not to admit of it.

It is the opinion of at least one pathologist—Grisolle—that in pneumonia the capillaries are very probably augmented in number, as well as in size. It is impossible to speak positively with reference to this point; but my own opinion is decidedly opposed to that of Grisolle. The arrangement of the pulmonary plexus in health is such, and its branches are so numerous, so closely set, and anastomose so freely with each other, that I believe no further development of vessels ever takes place.

In the stage of grey hepatisation, the air-sacs are still the seat of the exudation; and no destruction of their walls takes place, unless abscesses are formed. There is no intestitial suppuration. The exudation-matters, with which are mixed, but apparently not always, pus-corpuscles, and a considerable quantity of fat, are contained within the air-sacs, and, in the process of recovery, are either absorbed or expectorated.

From a consideration of the foregoing facts, I think it may be concluded that pure pneumonia consists of an inflammation of the walls of the air-sacs; that the blood-vessels involved in the disease are the branches of the pulmonary artery which constitute the pulmonary plexus; and that the capillaries of the bronchial arteries are in nowise implicated, unless there is a concurrent bronchitis, which is an addition to, and not an essential part of, pneumonia.

If the opinions I have expressed with reference to the seat of pneumonia be correct, they tend to simplify our views of the nature of the disease. The affection becomes localised in the pulmonary plexus—a circumstance which gives it a greater importance than it would possess, did it depend simply upon a morbid state of the bronchial arteries, which are still held by

some to be the nutrient vessels of the air-sacs, and, as such, the sole vessels implicated in pneumonia.

There are some circumstances which seem to me, apart from the anatomical considerations I have referred to, to bear strongly in favour of the views I have expressed. Amongst these, I would mention the severity of the fever which accompanies pneumonia, assimilating it, in this respect, very much to a blood-disease; and, again, the rapidity with which consolidation of the lung takes place. It is easy to account for this rapid consolidation, supposing the materials to be poured out from the great pulmonary plexus; but it is very difficult to understand how the small bronchial arteries could thus rapidly give rise to the effusion of so large a quantity of material, supposing them to be solely concerned in its production.

It has been objected to the view that pneumonic exudation takes place solely into the air-sacs, that, in certain forms of the disease, there is no expectoration: further, that *post-mortem* examination shows that, in such cases, exudation has taken place into the "interlobular tissue." I have already explained my views with reference to the non-existence of any tissue around the air-sacs which could be the seat of exudation; and that, in the many cases of pneumonic lung which I have examined, I have always found that the effused matters have been poured into the air-sacs.

With regard to the absence of expectoration in certain cases of pneumonia, and the inference that has been drawn from the circumstance that the exudation is not poured into the air-sacs, I cannot think that the fact affords any such proof. Expectoration in pneumonia is a symptom which varies so much, it is so often small in quantity when the inflammation is extensive, and *vice versâ*, that it bears no proportion to the amount of lung involved; nor can its entire absence throughout a case be admitted as proof that the exuded matters have not been poured into their usual seat. *Post-mortem* examination alone can afford proof of this; and, as I have before remarked, I have never found, in the many specimens I have examined, the exudation occupying any other site than that I have referred to. That the areolar tissue which surrounds the lobules of the lung *may* be the seat of inflammation, I do not deny; but I have never verified the existence of such a condition by *post-mortem* examination; and, if it do exist, it must constitute a disease very different from ordinary pneumonia.

That the seat of pneumonia is the air-sacs of the lung, and that the exudation in it is poured into their cavities, is no new doctrine; but, as I have already remarked, the view is one by no means universally acknowledged. There can be no doubt that Dr. Addison clearly defined the seat of the pneumonic exu-

dation, and expressed an opinion that no intervesicular areolar tissue existed in the lung. But the views of Addison were not generally admitted by pathologists, as is abundantly evident in their writings. My researches on this subject were commenced in the year 1857, and my conclusions were arrived at without any knowledge of the views which had been so clearly expressed by Addison. A careful investigation of the healthy lung-tissue soon convinced me that no intervesicular or interstitial tissue existed; and subsequent examination of morbid specimens showed me that the air-sacs were the seat of true pneumonic exudation.

Before I proceed to speak of the treatment of pneumonia, I wish to say a few words in reference to the early physical signs of the disease, and the morbid conditions by which they are produced.

The general symptoms and signs which characterise the onset and progress of pneumonia are so well described in your various systematic works, and will be so frequently illustrated in the cases which I shall have to detail, that I shall purposely abstain from any regular description of them here. I must, however, refer at some length to a phenomenon which I have noticed, and about the existence of which there is some difference of opinion.

I am of opinion that engorgement is not the earliest morbid condition of pneumonia; and I also believe that crepitation is not the earliest physical sign of the disease. Crepitation is the auscultatory sign which characterises the stage of engorgement, and practically is the first sign on which you can depend as indicating the existence of pneumonia. I shall have to speak of it again, and point out to you that it may be heard when no pneumonia is present.

But, of the earliest morbid condition: I agree with the conclusions arrived at by Dr. Stokes, that there is a stage prior to that of engorgement, characterised by dryness, intense arterial injection, and, consequently, a bright vermilion colour, of the pulmonary membrane. In proof of the probability of this condition, I must appeal to the facts furnished by auscultation; viz., the existence of a harsh, loud, puerile, respiratory murmur, preceding the crepitating *râle*.

It is very rarely that an opportunity is afforded us of making an examination of the chest in incipient pneumonia; and to this fact, we must, I think, attribute the differences of opinion which have been expressed as to the earliest physical signs of the disease.

I have had two cases under my care in this hospital, in which I noted the existence of a loud, harsh respiratory murmur as an initial physical sign of pneumonia. In both cases, there was acute primary pneumonia occurring in lungs previously healthy.

I think it is important to note this; for, to render the observation of this particular phenomenon perfectly trustworthy, it ought to be made on a case, not where there is progressive inflammation, nor yet where there are consecutive attacks of inflammation, for the cause of the phenomenon might, under such circumstances, admit of some doubt; but where, the lung being in a healthy condition, inflammation of the organ comes on suddenly. Let me refer you to the following cases.

Case 1.—P. F., a carter, was admitted into the hospital, under my care, on August 8th, 1864. On the day of admission, at an early hour, he was out in a shower of rain, got very wet, and did not change his clothes. In the course of two or three hours, he felt pains about the limbs, and had severe rigors.

When admitted into the hospital about mid-day, he was seen by the house-surgeon. He then complained of pain in the lower part of the left side. There were no febrile symptoms, and no abnormal physical signs about the chest.

On the following day, about noon, his condition was as follows:—The pulse 120, and full; respirations 32; skin very hot and dry; tongue coated with a white fur. The pain in the left side had increased. There was no cough, but much dyspnœa. The percussion-sound and movement of the left side of the chest were natural. *At the lower and back part of the left lung, a loud, harsh, peculiar respiratory murmur was audible.* No such sound could be heard elsewhere. The patient was ordered a grain of opium three times a-day, with small doses of tartar emetic.

The next day, the pain in the side was almost gone. The pulse was 104; the respirations were 28. The physical signs were as follows:—Deficient movement of the left side, dulness at the left base, with crepitating *râle* over the lower half of the left lung. The crepitating *râle*, which was distinctly of a pneumonic character, occupied, in fact, this day, the seat of the harsh loud respiration of the preceding day.

It is needless to follow the history of the case further. The crepitation was succeeded by bronchial breathing and all the symptoms of confirmed pneumonia. The patient made a satisfactory recovery, and was convalescent on the eighth day of the attack.

Case 2.—D. M., a Frenchman, was admitted into the hospital, under my care, on January 23rd, 1865. Two days before admission he was perfectly well. He complained of dyspnœa and pain in the chest. On examination, *a loud, harsh respiratory murmur* was heard over the lower and back part of the left lung. The movements of the side were good, and there was no dulness. The breath-sounds over the opposite lung were normal. On the following day the physical signs were as follows:—Slight dulness at the base of the left lung, and well-marked crepitation

over about the lower half of the same lung. In fact, as in the preceding case, the loud respiration of one day was replaced by the crepitating *râle* on the next. The patient subsequently had all the symptoms of confirmed pneumonia—dulness, bronchial breathing, and rust-coloured sputa. He was convalescent about the tenth day.

From the observation of these cases, I cannot entertain the slightest doubt that neither is the crepitating *râle* the earliest physical sign of pneumonia, nor engorgement its first morbid condition. It is true that I have never been able to demonstrate by a *post-mortem* examination, the dryness of a pulmonary membrane and the arterial injection, which I believe to exist prior to the stage of engorgement; nor, indeed, would it, I think, be easy to satisfy the minds of those who are sceptical on the subject by any such examination; for they might consider the appearances the result of mere congestion. At the same time, this absence of *post-mortem* proof must not blind us to the facts which clinical experience teaches us.

As I have already mentioned, there is much difference of opinion as to the existence of this phenomenon; but before I speak of the objections which have been brought forward against the possibility of its occurrence, I wish to explain the way in which, I believe, this harsh respiration is produced, and to point out to you the condition in which I suppose the pulmonary membrane to be; and I shall take this opportunity of explaining to you what I consider to be—1. The cause of the ordinary respiratory murmur; and 2. The cause of the crepitating *râle*.

First, as to the respiratory murmur:—Various causes have been, from time to time, assigned for its production; and, although, in a practical point of view, its exact seat and proximate cause may appear unimportant, provided we are familiar with the sound itself, and can rightly interpret the modifications of it which result from disease, yet it must be confessed that clear views of the physical phenomena of all healthy organic actions are very desirable; and just as our knowledge of the simple manner in which the sounds of the heart are produced has facilitated our diagnosis of cardiac diseases, so more precise information than that we already possess, with regard to other points of a similar nature, cannot fail to be followed by beneficial results.

To the physical condition of the lung it is obvious that we must look for an explanation of the cause of the respiratory murmur; and there is one anatomical point, either unknown to those who have given their attention to this subject, or overlooked by them, which appears to me to offer a satisfactory solution of the phenomenon.

Without attempting to examine critically the opinions of

others, I must content myself with observing that I believe the air-sacs of the lungs to be the seat of the murmur; and I shall now proceed to point out the arrangement which exists at the mouth of each air-sac, to which arrangement I am of opinion that the sound is due.

I have pointed out elsewhere the manner in which each bronchial tube terminates in a series of air-sacs; and the passage which has the most important bearing on the question of the cause of the respiratory murmur is the following.

"The air-sacs consist of somewhat elongated cavities, which communicate with a bronchial ramification by a circular opening, which is usually smaller than the cavity to which it leads, and has sometimes the appearance of a circular hole in a diaphragm, or as if it had been punched out of a membrane which had closed the entrance to the sac."

This arrangement is best seen in the lungs of children and of adults. In old age it has frequently disappeared, more or less. It may be often well seen in a piece of lung, the blood-vessels of which have been injected with coloured size, and which, after being dried, has been subsequently soaked in spirit. By careful dissection under a microscope the membrane, guarding the mouth of the sac, and narrowing the entrance to the cavity, is easily demonstrated. The membrane forms a part of the aërating walls of the air-sac, and has branches of the pulmonary artery ramifying in it.

It is obvious that a condition of this kind must have an influence on the passage of the air into the air-sac; that, to a certain extent, it must produce an impediment to the current of air, and thus give rise to a sound.

As the air is moved along the bronchial tubes it meets with no obstruction to its passage; but at the commencement of the air-sacs an opening exists which is smaller than the cavities between which it is placed. As the air-sacs expand with each inspiration, air must pass through the constricted opening. I believe that, in the passage of the air through this opening, the main element of the respiratory murmur consists.

The following facts appear to me to afford arguments in favour of the view I have advanced: the respiratory murmur is loud and well marked in infancy and childhood; it becomes modified in adult age, and in old age it is frequently very feeble. In the infant the membrane placed at the mouth of the air-sac is well marked and uninjured; the opening in it has a clearly defined and sharp margin; and, moreover, it is smaller—not only absolutely, but I believe also relatively—than in after life. In the adult, the air-sacs have undergone enlargement, and the membrane at their entrance is more or less perfect according as the lung is in a more or less healthy state; whilst in old age,

the membrane has often, to a great extent, disappeared, apparently as the result of the wasting and absorption which so frequently occur in the lungs of those advanced in life.

Further, the changes which take place in the character of the respiratory murmur in emphysema of the lungs afford an additional argument in support of this view. In this disease, in consequence of distension, rupture, and absorption, the air-sacs become much altered in character, and the membrane guarding the entrance to them entirely disappears as the disease progresses. The obstacle to the passage of air is therefore removed; and hence one reason of the extremely feeble respiratory murmur which characterises the affection.

And now let me explain to you the way in which, I believe, this healthy respiratory murmur passes, first of all, into the harsh puerile respiration of incipient pneumonia, and subsequently into the crepitating *râle*, when the disease is fully established. It appears to me that the first phenomenon, which is merely an exaggeration of the healthy sound, is the result of the dry and swollen condition of the pulmonary membrane; that this gives rise to a constriction of the mouths of the air-sacs, and approximates them, therefore, to the condition which they present in childhood, when a loud respiratory murmur is usually heard. I see no reason to doubt that there is a dry stage in pneumonia, as well as in inflammation of mucous membranes. It is said that every stage of inflammation of serous membranes is marked by exudation; and it has, therefore, been inferred that such must be the case in pneumonia. But, although the lining membrane of the air-sacs resembles to a certain extent a serous membrane, yet it does not possess all the characters of such membrane. It consists, as I have already mentioned, of some yellow elastic fibres, a very delicate basement membrane covering the blood-vessels, and a layer of epithelium having somewhat the character of the epithelial cells found on serous membranes, but being by no means identical with them.

It has been objected to the view that there is a puerile respiration preceding the crepitating *râle* in pneumonia, that the sound which is thus described is nothing more than the result of a supplementary movement in parts around a spreading obstruction; that when this sound is heard, and afterwards is followed by crepitation, there has been, at the time when it was heard, consolidation of the lung in adjacent, more deeply seated, portions. I think that the circumstances under which the sound was heard in both my cases negative the possibility of such an explanation of it. Take the first case. The patient is admitted at noon on the 18th August, having got wet early in the morning, previously being in good health. He is carefully examined,

and nothing abnormal is found about the chest; nor is there any fever present. It will scarcely be inferred that pneumonia was present at that time. Twenty-four hours afterwards, he is again examined. There is a good deal of fever present; the respiration is hurried; and there is pain in the chest. There is no dulness; but a harsh respiration is heard over the back of the left lung. Now, is it all probable that, during the short period that had elapsed since the man's attack, consolidation of the lung could have occurred—especially taking into consideration the subsequent progress of the case? For after the lapse of twenty-four hours more, we have the stage of engorgement established in the more superficial portions of the lung, but no consolidation. I need not refer to the second case, for it presents features similar to those of the first.

I feel convinced that, in the two cases which I have detailed to you, this harsh respiration was an initial symptom of pneumonia; and although it may not be a constant precursor of the crepitating *râle*, I believe it would be much more frequently met with, if we had more opportunities of auscultating our pneumonic patients in the early stages of their disease.

But now, as to the manner in which the crepitating *râle* is produced: I believe that its seat is in the air-sacs, and that it is caused by their expansion at the time when their walls are covered with the secretion which is poured out upon them. The expansion of the sacs at the time when they are partially filled with fluid appears to me to afford the conditions necessary for the production of the *râle*. That it has its seat in the finest bronchial tubes, I cannot admit; for in some cases these tubes are found after death free from exudation.

There are conditions under which the crepitating *râle* may be heard when no pneumonia is present. In certain cases of œdema of the lung, I have heard a crepitation as pure as anything I have ever heard in the most typical pneumonia; and trusting, therefore, to this sign alone, you might in some cases be misled as to the nature of the disease; but, generally speaking, there is no difficulty. The ordinary symptoms of pneumonia are absent in these cases; there are dropsical effusions in various parts of the body, and other conditions which enable you to form a correct diagnosis. Still some cases are very puzzling, and at first are apt to mislead us; such, for instance, was that of Scott, who died in L. Ward, and who, whilst in the hospital for valvular disease of the heart and dropsy, was seized with pneumonia. When I first heard the crepitating *râle* in this man, I thought it was the result of œdema of the lung; and it was only when other symptoms and signs developed themselves, that I became sure of the existence of pneumonia.

You may perhaps ask me how it happens that we hear the same sound in œdema of the lung as in pneumonia. The fact is, that the seat of exudation in the two diseases is the same; and in both conditions we have present, in the air-sacs, a certain amount of air and liquid exudation; the only difference being, that in one instance the liquid is somewhat more viscid than in the other.—*British Medical Journal, Jan.* 19, *and March* 23, 1867, *pp.* 48, 311.

27.—ON THE TREATMENT OF THE ADVANCED STAGE OF CROUP.

By Dr. Eben. Watson, M.A., Surgeon to the Glasgow Royal Infirmary.

[The true indication is to relieve the spasm of the glottis, or to reduce the œdema of the mucous folds above it, without wounding the trachea, and then to use measures for the expulsion of the false membrane in due time through the natural openings.]

The topical application of solutions of the nitrate of silver of gradually increasing strength is a powerful reducer of the irritability of the glottis, but it requires far too much time for its action, even if it were otherwise suitable to cases of exudative inflammation, which I believe it is not. Emetics do certainly act on the glottis, and are such great helps in relaxing it that they can never be dispensed with, but their operation is only short-lived, and the patient would soon be exhausted by their very frequent employment. The inhalation of chloroform is perhaps the most speedy and powerful relaxer of the glottis at present known, and it may with caution be used in the cases to which I am now referring. It has this advantage, likewise, that its action may be maintained for a much longer time than that of those previously mentioned.

A few weeks ago a child of two years old was brought into one of my wards in the Infirmary, in the advanced stage of exudation croup. I thought he was suffering specially from spasm of the glottis, and had him put under the influence of chloroform, in which state his breathing became much fuller and more satisfactory, while both colour and heat greatly improved. But the mother, terrified at some mention that had been made of an operation, would not consent to his remaining in the house, and in spite of all our remonstrances, took the child home that same day, I suppose to die.

Another good relaxer of the glottis is hot water, with which the vinum belladonnæ may, I think, be usefully mixed, and the best way of applying it is by Siegle's atomizer. In this way the patient is made to inhale the mixture as a spray, and even

if he be an infant, the air in his neighbourhood may be so impregnated with the vapour that he cannot escape its action. I have seen much advantage from this appliance both in croup and in other laryngeal states allied to it.

These agents for relaxing the glottis have a double advantage: for they both gain time, which is so precious in these cases, and they may be alternated with other means, such as emetics, for the expulsion of the false membrane. They are the only relaxers of the glottis of which I can at present speak from experience; but I do not doubt that when attention is fairly drawn to the subject, other agents will be discovered still more appropriate to the fulfilment of this important end. At all events, that is the direction in which our endeavours ought to point, if we are ever to be able to overcome this formidable feature of advanced croup.

In those cases of the disease in which suffocation becomes imminent from the supervention of œdema of the arytenoepiglottidean folds, tracheotomy is often performed, and were it not for the unsound state of the trachea this would be a successful operation. Indeed, it will be found on a careful examination, that the most of those cases which are reported as successful performances of tracheotomy in croup are cases of œdema glottidis, often without a symptom of exudation at all, or in which the false membrane has been previously expelled, for œdema is apt to occur late in the disease after the patient has struggled through its exudation stage. In such circumstances, the obstruction to respiration being at the glottis, tracheotomy relieves with certainty; but I repeat, that if the operation be performed during the exudative inflammation of the trachea, the natural and ordinary result is aggravation of the morbid action too often to a fatal extent. I also assert, with some confidence, that in the vast majority of cases, œdema glottidis may be reduced without tracheotomy by the timely employment of what I think more rational and certainly much safer measures.

Thus, for instance, I have in a good many cases of this kind successfully applied a strong solution of nitrate of silver to the œdematous swellings by means of the laryngeal sponge-probang, and, whenever this is rightly done, it will be found that there is an almost immediate transudation of serum from the tumour whereby its bulk is diminished and the air permitted to pass more easily through the glottis.

If, however, the swelling does not yield to this application, or not with sufficient rapidity for the urgency of the case, there is another procedure of more speedy efficacy which should then be practised. I refer to pricking or incising the œdematous parts with the laryngeal lancet;—a measure which I can thoroughly

recommend in suitable cases. In the performance of this little and almost bloodless operation the laryngoscope is not always available either owing to the age or irritability of the patient; and, perhaps, in all cases, the best and safest way of performing it is to steady the tumour with the forefinger of the left hand, and then putting in the lancet, with its blade concealed till it touches the part at the tip of the finger, to protrude the blade by means of the spring in the handle and so to prick or incise the part as desired. This is not a difficult operation, and I am certain from my experience of it, that it gives relief to the breathing, both speedily and effectually, without incurring any of the dangers of tracheotomy.

When this operation is required during the exudative stage of croup, I find it useful to follow it with an emetic, by which means all the loosened exudation is expelled and the full amount of benefit ensured. Much has been said and written of the advantages of particular emetic medicines in croup. But I suppose that the essential quality, desirable in such cases, is speedy action with as little as possible of depressing effect: and this is abundantly fulfilled by a combination of ipecacuan powder with sulphate of zinc. In my practice I never prescribe the tartrate of antimony alone as a vomit, especially to a child, but I find that drug useful in cases of croup in almost every stage, when given in small doses, of the wine for instance; I think its effect when thus administered, is chiefly that of soothing and calling forth a natural moisture upon the lining of the wind-pipe. Since, moreover, the antimony is not used in these advanced cases for its depressing effect, it is not inconsistent to employ it as I have described, while at the same time it may be necessary to support the patient's strength with soups or even with wine. The inhalation of a spray of warm water from Siegle's atomizer is often of essential service after lancing the œdematous aryteno-epiglottidean folds. The vapour just acts as a fomentation does to external parts, by soothing its irritability and reducing congestion.

In conclusion, I think I may now re-state in brief terms the practical rules which, in my opinion, flow from the preceding consideration of this subject.

1. Tracheotomy should on no account be performed during the exudative stage of croup; for it is either useless in the worst cases or positively hurtful in those where there is any hope of recovery.

2. In those cases of advanced croup in which the spasmodically constricted glottis is the cause of immediate danger, our efforts should be directed towards its relaxation, for which purpose no very satisfactory means are as yet known to us, but perhaps the best are the inhalation of chloroform and the use of

Siegle's atomizer, interrupted occasionally by the employment of an emetic.

3. In those cases in which œdema of the aryteno-epiglottidean folds is the proximate cause of impending apnœa, the swellings should be reduced by the topical application of strong solutions of nitrate of silver, or by the laryngeal lancet. And, lastly,

4. After the expulsion of the false membrane from the windpipe, the performance of tracheotomy will very seldom be necessary; but, if it is required from obstinate disease of the larynx, it will generally prove successful, in striking contrast to the sad results of the operation when performed while the trachea is lined with exudation.—*Glasgow Medical Journal, Feb.* 1867, *p.* 374.

28.—ON NERVOUS ASTHMA.

By Bamberger.

(Translated from the Norse by Dr. W. D. Moore, of Dublin.)

[The case which gave rise to the following remarks appeared originally in the Würzburger Med. Zeitschrift, 17 Band, i. and ii. Hefte, 1865, whence they have been translated into the Norwegian Magazine of Medical Science by F. Kiær. Not having access to the above-named German journal, I shall translate the author's remarks from the Norwegian version; the details of the case itself I do not think it necessary to reproduce.—W. D. M.]

Nervous asthma, the existence of which it is in the present day no longer necessary to prove, may be best divided into a central and eccentric or reflex asthma. The first is a very rare form of disease, whether it be based upon material changes, or these cannot be demonstrated; reflex asthma, on the contrary, cannot be considered as so very rare. The abnormal irritation, the conduction of which takes place chiefly, if not exclusively, through the vagus, proceeds in most cases from the respiratory organs, and asthmatic attacks of undoubtedly nervous nature are by no means uncommon in the most different pulmonary affections, especially in emphysema, but also in violent catarrh, pleuritis, tuberculosis, &c. The so-called hay asthma is likewise a reflex asthma, depending on very extensive bronchitis. In general it is not difficult to distinguish such a nervous attack from the mechanical dyspnœa dependent on the presence of the pulmonary affection. Nervous asthma in an emphysematous patient differs very essentially from the pseudo-asthmatic dyspnœa, which the same patient experiences at another time in acute catarrh, or where there is a large accumulation of mucus. That the irritation may also proceed from other organs,

can scarcely be matter of doubt, although on this point we know little positively. That asthmatic attacks may be caused by diseases in the heart and aorta, may be regarded as tolerably certain, although on account of the pulmonary affection almost invariably coexistent therewith, it is difficult to prove that the abnormal irritation proceeds exclusively from those organs. Undoubtedly there exists an hysterical asthma, which ought more correctly to be looked upon as of central origin. On the the other hand, the theory which considers asthma as a symptom of gastric, hepatic, splenic, and intestinal affections; that of hemorrhoidal asthma and of asthma in tapeworm, in renal diseases (the so-called asthma urinosum is nothing else than pulmonary œdema), and in those of the sexual organs would not now, as it did of old, find many adherents, yet we ought to beware of too unconditionally, and without further examination, entirely rejecting the older theories.

The case above recorded is indeed with great probability to be considered as one of reflex asthma, proceeding from the lung. At least it appears from the history of the case that a violent catarrh had preceded the attacks, and this view was confirmed by the post-mortem examination. As to the finely vesicular emphysema, we may without any hesitation regard it as a secondary phenomenon, produced by the extremely violent disturbances of respiration, but the state of the case would not in any essential point be altered, were we to look upon the emphysema as pre-existing, for which, however, there is not the slightest reason. The other changes in the body present nothing of special interest. The dilatation of the right side of the heart, which, moreover, took place to a moderate degree, is a result of the emphysema. The moderate thickening of the left ventricle can be brought into casual relation only to the atheromatous process in the arteries, just as the systolic bellows' murmur, observed along the aorta during life, can be explained only by the thickening of the inner coat of that vessel. The firm and hyperæmic state of the spleen and kidneys and moderate degree of hydrocephalus are to be considered only as results of the disturbance of the circulation.

But what in this case especially interests us is less the causal relation, which will long continue as obscure as are most of the neuroses, than the mode in which the asthmatic paroxysm manifested itself, and the physical state upon which this depended.

What, properly speaking, is nervous asthma, and how is it developed? To this question we obtain, with rare unanimity, the answer—Nervous asthma depends upon spasm in the bronchi, and mainly in the finer, contractile fibre-cells. Bergson in particular, in his well-known monograph, has taken the greatest trouble to prove this upon negative and positive grounds, but

unfortunately without the slightest success. There is just now no other reason given for this view than the mere presence of those muscular elements, which, indeed, involve the possibility, but by no means consequently the actual existence of such a spasm.

Up to the present, however, only Wintrich has appeared in opposition to this generally received hypothesis, and it may be said that Wintrich's statements contain more sound reason than all hitherto written upon nervous asthma. Wintrich does not indeed deny the possibility of a spasm in the bronchial muscles, but that such can be the cause of nervous asthma, and this for two reasons. In the first place, he observed several cases of the disease, in which the diaphragm during the attack lay very deep and immovable, where manifestly there was only tonic spasm of the diaphragm, while this phenomenon cannot possibly occur in bronchial spasm. In the second place, both the inspiratory and expiratory forces are considerably greater than the sum of the forces of the bronchial muscles. I am myself indeed quite of the opinion, that hitherto there is no warrant for the assumption of bronchial spasm as the cause of asthma, and that the causes of the latter must, in the majority of cases, be sought elsewhere; but it, nevertheless, appears to me that it is going too far completely to deny the possibility of such a condition. Against these arguments it may, in fact, be objected, that, in the first place, it is not proved that the diaphragm in all cases of nervous asthma is found to be situated low down and immovable; and in the second place, the preponderance of both the inspiratory and expiratory powers over the powers of the muscular pulmonary elements may indeed be admitted, but this does not hinder us from assuming a conflict between the two, and it is precisely upon this that the asthmatic attack might depend. We might, therefore, simply assert, that in such a conflict the final victory must always remain with the "legitimate" respiratory powers as the stronger, or, in other words, that no one could be suffocated in an attack of purely nervous asthma.

If we now return to our case, there can be no doubt that in it there could have been no such thing as spasm in the bronchi. Even the deep position of the diaphragm in itself renders such a theory impossible. I will, moreover, hereafter revert to the symptoms which must attend spasm in the bronchi, and it will be seen that most of them are directly opposed to those observed in the case in question.

On the other hand, all the phenomena may, with almost mathematical accuracy, be accounted for by the existence of a tonic spasm in the diaphragm and secondary antagonistic spasms in the expiratory muscles depending thereon. The low position and immobility of the diaphragm, in spite of the enormous

efforts of its antagonists, in connexion with the unyielding nature of the lower half of the thorax, is, in this case, the decisive and convincing element. The absence of respiratory murmur in the lower part of the chest is easily explained by the absolute immobility of the parts of the lungs lying above the diaphragm. Inspiration could take place in the upper parts only with the aid of the superior, and especially of the cervical respiratory, muscles. The inspiratory increase of the capacity of the chest on a level with the xiphoid cartilage, in spite of the complete immobility of the diaphragm, is essentially to be considered only as a diminution of the contraction of the thorax effected during the expiratory spasm by the abdominal muscles. But one phenomenon is more difficult of explanation—namely, the distinctly tympanitic sound in the lower part of the thorax during the expiratory spasm. When the attack occurred, and the diaphragm suddenly assumed its low position, the inferior portions of the lung must have been suddenly inflated. During the expiratory spasm the abdominal muscles must strongly compress the thorax, and thus the pulmonary cells and their membranes must come to be under a very strong pressure. But how is the tympanitic sound to be thus explained? According to Skoda's theory this circumstance—namely, great tension of the cell membranes, would produce exactly the opposite effect.

After having quoted a couple of theories, which, however, do not seem to the author sufficient to explain the symptoms described, he continues:

"We may therefore say that the picture we might, *a priori*, form of a tonic spasm of the diaphragm and that observed in my patient, completely correspond to one another. Moreover, from Duchenne's experiments on animals, we are acquainted with the symptoms of tonic diaphragmatic spasm produced by electrical stimulation of the phrenic nerves. They agree in all essential points with the phenomena observed in my patient; only the results of percussion are not mentioned by Duchenne; however these fall away of themselves, as they are dependent merely on the low position of the diaphragm." In the human subject Duchenne has not seen tonic spasm of the diaphragm, but he quotes a case observed by Valette, in which death was caused by spasm in that muscle supervening during an attack of acute rheumatism. The symptoms, with the exception of the state of the abdominal muscles, agreed completely with those experimentally produced by Duchenne; "the abdominal muscles exhausted themselves in vain efforts to contract the base of the thorax." In this instance nothing was seen of these fruitless efforts on the part of the abdominal muscles, which were so very striking in our case. Duchenne explains this difference correctly by showing that with this painful rheumatic contrac-

tion of the diaphragm a corresponding antagonistic action of the abdominal muscles could not take place, because the pains would then be increased; the patient would, on the contrary, be compelled to exert himself to keep these muscles as quiet as possible.

In my patient the tonic spasm of the diaphragm which attained the greatest height during the attack, seemed not to have entirely ceased in the intervals, at least not in the latter period of the patient's life. The striking slowness of respiration and the invariably increased action during expiration appear to me to prove this. Certainly the diaphragm was movable in the intervals, but the excursion did not, on the deepest inspiration, amount to more than an inch, which is much less than the normal range. Certainly the position of the diaphragm in the intervals also corresponded to the normal, but an increase of the usual tension, a kind of subtetanic condition, is also possible without change of position.

There is consequently not the least doubt that there are asthmatic attacks whose cause lies in a tonic spasm of the diaphragm. In addition to the case now communicated, I remember two others where the paroxysms, if not quite as violent, were so like those here described that I have no doubt that they had the same origin. We have, moreover, the case observed by Wintrich, in which I find only the striking circumstance that the spasm of the abdominal muscles is not mentioned.

I have no doubt that spasm of diaphragm is the most frequent and most important, but by no means the only cause of nervous asthma. To this opinion I was led even by the fact that, in reflecting on the various attacks of this kind in different patients, I find a very essential dissimilarity in the elements composing the attack, and in its whole bearing. In one case the spasm had a more inspiratory, in another a more expiratory character. At one time these, at another those respiratory forces were in increased activity. On account of the complicated nature of the respiratory act we can imagine different possibilities, whose existence must certainly, for the most part, first be proved.

Thus it appears to me, that the paroxysm in many cases is due to a mere clonic spasm in all or in the majority of the muscles of inspiration; for example, in hysterical asthma (I do not mean the hysterical spasm of the glottis). At least there was in the cases of this kind which I myself observed, always an extremely vehement panting respiration, with the co-operation of all the auxiliary muscles of inspiration, with a perfectly free passage through the larynx. Expiration took place with ease, although it, of course, in correspondence to the inspiration,

was deeper and stronger than usual. However, I do not mean hereby to assert that other forms of asthma may not occur in hysterical patients, or that this form is found only in such patients.

Another possibility lies in paralytic states of the diaphragm. It is well known that this state has been observed in the human subject by Duchenne (especially in progressive muscular atrophy, then in lead-cachexy, hysteria, inflammation of the abdominal organs), and it has been produced in many instances, experimentally, by dividing the phrenic nerves. In many cases distinct asthmatic symptoms occurred; in some, on the contrary, the phenomena were not very considerable. Gerhardt, too (*Der Stand des Diaphragma*, Tubingen, 1860), correctly calls attention to the fact that the diaphragm obtains motor branches, not only from the phrenic nerve, but also from the 7th, 8th, 9th, 10th, 11th, and 12th intercostal nerves. It is, indeed, even *a priori*, probable, that such forms will be distinguished by their longer duration. The symptoms which depend on a paralysis of the diaphragm, especially the physical signs, are very accurately described by Duchenne, and particularly by Gerhardt. The diagnosis would, in the concrete case, not be more difficult than the diagnosis of diaphragmatic spasm.

As another possible case, of the existence of which there certainly is at present no proof, we may mention a spasm in the expiratory muscles alone, and principally in the abdominal muscles. In this case the muscles of inspiration must come into increased activity.

Lastly, there remains spasm in the bronchial muscles, which has the least amount of probability in its favour, but, nevertheless, is not inconceivable. What physical signs should we expect under such a condition?

As such a spasm would obstruct both respiratory acts, but expiration has a greater amount of forces at its command, both inspiration and expiration must certainly be laboured, prolonged and combined with great effort of the respiratory muscles, but this would be in a still higher degree the case with inspiration. The diaphragm would probably stand high, the thorax would be diminished in all directions, and the intercostal spaces would be more strongly drawn in, a very considerable increase of the expiratory, and especially of the inspiratory murmur, would necessarily be perceptible. Accordingly as the air, after having overcome the obstruction, could stream into the cells, or as this would be impossible, so must the character of the inspiratory murmur be either vesicular or undefined. In high degrees we might imagine the possibility of a moderate diminution of the resonance of the sound on percussion.

In glancing back briefly on what has been advanced, the conclusion must appear to be fully justified, that nervous asthma depends on different kinds of lesion of motor innervation. The form observed by Wintrich and by me, which depends on tonic spasm in the diaphragm, has been fully established. Scarcely doubtful can that form be considered which depends on paralysis in this muscle; all other possible cases must first be proved hereafter by accurate observations.

In a therapeutical point of view, spasm of the diaphragm has probably most to expect from the uninterrupted current; paralysis, on the contrary, has most to look for from inductive electricity. (The employment of electricity was, in the above case, prevented by the sudden death of the patient).—*Medical Press and Circular, Feb.* 13, 1867, *p.* 140.

29.—ON THE TREATMENT OF HOOPING-COUGH WITH HYDROPHENYL, OR BENZINE.

By Dr. Lochner.

In the year 1864, Dr. Lochner having been convinced that the ordinary remedies had no effect over the paroxysms of hooping-cough, sent his patients affected with that disease to the purifying rooms of the gas-works; but the inconvenience of taking children there in bad weather, and other circumstances, induced him to modify the treatment, which, however, he considered essentially to be a good one. In order to attain his object, he made use of one of the substances contained in the purifying chambers of the gas-works, namely, hydrophenyl, which, when unpurified, is called benzine. He employed it at first in very small doses; but after he found that it had been given in large quantities in Germany for the destruction of trichinæ, he used it more freely, and he obtained, as he believes, the same results as from a residence in the purifying chamber of the gas-works. In order to assist the internal treatment, he poured a few drops of benzine on the bed of the patients, so that a smell similar to that from the gas-works should be constantly diffused through the room. Dr. Lochner tried the plan on his own child; and he states that the precursory symptoms of the hooping-cough lasted a week, and the disease itself only six days; and although the paroxysms were very violent, they did not amount in number to more than five or six in the twenty-four hours, and were shorter in duration than in other children. He gave this child from ten to fifteen drops of the benzine every day; and as soon as it was asleep, he sprinkled a few drops on the bed. He thinks that the best mode of administration is in a spoonful of water.—*British and Foreign Medico-Chirurgical Review, April* 1867, *p.* 532.

30.—A CASE OF RESUSCITATION AFTER TWO HOURS' APPARENT DEATH BY DROWNING.

By John Dennan, Esq.

On the afternoon of Tuesday, the 15th instant, about a quarter-past four, I received, in the absence of Mr. Obré, a summons to view a dead body just withdrawn from the ornamental waters in Regent's-park.

While on the way I entered somewhat minutely into the particulars with my guide, and on my arrival determined to examine the subject very carefully.

The man was apparently *quite dead*, and I heard the following statement, viz.:—That he had left his abode in perfect health, and joined in the general amusements on the ice, and was one of those at some distance from the shore when the catastrophe occurred. I particularly observed that the patient was intensely cold, from having been immersed some minutes, and having struggled in the water for more than half an hour. There was neither breathing nor heart's action, the pupils dilated, the jaws clenched, and the limbs contracted, so much so that the clothes had to be cut off before anything could be done to the patient.

A frothy mucus covered the mouth and nostrils, the body was much swollen, and I had it placed on an incline at an angle of about 35°, as the body was so very cold. I commenced, with the assistance of the two men, who brought him home, to try to restore warmth by degrees, rubbing the chest and limbs thoroughly and swiftly with ice and snow, cleansing the mouth and nostrils from time to time, and adopting Silvester's method of artificial respiration for more than two hours. After a quantity of frothy mucus was discharged, slight signs of animation were perceptible, though so faint, that I almost despaired.

I then had him well wrapped in blankets, placing large tins of hot water at the feet, and mustard poultices on the chest, while the body was well rubbed with warm flannel under the blankets. I continued this treatment for three-quarters of an hour, at the same time continuing to imitate the movements of breathing. A decided improvement then took place. The patient's jaws relaxed, and he appeared to breathe more freely. I then administered two tea-spoonsfuls of warm water, which caused him to vomit slightly. As soon as he commenced breathing freely I was able to give him a little warm tea, which he apparently relished. I may here observe that I could not induce him to take spirits.

The patient was now placed in a warm bed prepared for him, soothed to sleep, and all undue excitement prevented.

The patient was feverish for one or two days, but on the following Friday I had the pleasure of receiving a visit from him.—*Medical Press and Circular, Jan.* 30, 1867, *p.* 95.

31.—ON FATTY DEGENERATION OF THE DIAPHRAGM.

By Geo. W. Callender, Esq., Assistant-Surgeon to St. Bartholomew's Hospital.

[No notice has previously been taken of this disease, nor has it been described in any systematic work on Medicine or Pathological Anatomy.]

A few cases have been referred to in which the diaphragm has become wasted in connexion with a decay of other muscles of the body, but these are widely different from those which I propose to relate, in which the muscle, for the most part in connexion with the heart, has been the seat of fatty degeneration, and, in some instances, by failure of its action, has been the immediate cause of the patient's death.

These cases came under my observation some years ago—1855-58,—whilst I held the appointment of Demonstrator of Morbid Anatomy at St. Bartholomew's Hospital, and consequently whilst it was my duty to make the medical *post-mortem* examinations. I publish them now because I am not infrequently hearing of cases of death from supposed fatty heart, but in which cases the earliest symptoms have been conspicuous for the remarkable disturbance and embarrassment of the breathing as distinguished from signs of failure of the cardiac action.

Case 1.—My attention was first drawn to the occurrence of fatty degeneration of the diaphragm by the following circumstances:—J. M., a female, aged 59 years, married, was admitted into St. Bartholomew's Hospital on the 30th of December, 1855, under the care of Dr. Hue. There was nothing in her condition to indicate the speedy termination of her life, for she complained only, in addition to a slight bronchial inflammation, of being faint and ill, without being able to refer to any special symptoms. She was exceedingly fat, her breathing was shallow, and her respirations rapid. The bronchial affection was quickly recovered from, and she was on the eve of leaving the hospital, when, on the eleventh day after her admission, she was found by the night-nurse "struggling for breath," and died almost immediately.

I examined her body eighteen hours after death. Although an abundance of adipose tissue existed wherever fat is usually present, the voluntary muscles retained a natural appearance. The heart and liver were far advanced in fatty degeneration, as also was the diaphragm, to an examination of which I was guided partly by the obscure circumstances attending her death and the story of the embarrassed breathing, and partly by the pale and mottled appearance of the muscle as seen through the covering of peritoneum. The other organs and the vessels of the body were natural.

Case 2.—Some time later the following case came under my notice :—S. P. M., a female, aged 50 years, single, was admitted into St. Bartholomew's Hospital, on January 1st, 1857, under the care of Dr. Hue, suffering from rheumatism of three weeks' duration, the present being her first attack. Inflammation of the pericardium, as well as of the endocardium, required especial treatment. She continued without any material change in the symptoms until the fourth day, when, at half-past two in the morning, she was seized with orthopnœa, with sudden and great depression as though from some severe shock, became livid, cold, and bedewed with a clammy perspiration. Within an hour she was almost pulseless, her breathing entirely thoracic, and so noisy that nothing could be determined with the stethoscope. Her abdomen was distended with flatus, and painful on pressure ; its walls were rigid and motionless. Sinking rapidly, she died the same morning at nine o'clock. Mr. Wood, to whose kindness I am indebted for this history, adds, "I could not help feeling that her mode of death resembled that from peritonitis from ruptured intestine ;" and he suggested that this might be a case of spoiled and fatty diaphragm.

On making the *post-mortem* examination, twenty-four hours after death, the body was found tolerably-well nourished, but the integument was of a dusky purple, as with people dead from engorgement of the right heart and lungs. On opening the thorax the heart was seen considerably enlarged. The pericardium was adherent, as also were the pleuræ opposite the diaphragm and the lower parts of the chest. The cavities of the heart were dilated, and the left ventricle was also hypertrophied (thick-walled). The cusps of the mitral and of the aortic valves were thickened and fringed with deposits. The lungs and the right cavities of the heart were filled with dark fluid blood. The folds of the peritoneum were laden with fat, which tissue was present in only small quantities in other regions of the body. The remaining abdominal and pelvic organs presented a natural appearance. The skull and its contents were natural.

The diaphragm was pale, with the exception of those portions which arose from the bodies of the vertebræ, and retained their ordinary aspect. On closer inspection, the remainder of the muscle was seen to be mottled with pale, yellow specks ; these resembled the markings often noticed in the muscular walls of a fatty heart. When examined under the microscope, this tissue was found degenerated into fat, the granules of which destroyed and took the place of the muscular structure. The heart was the seat of ordinary fatty degeneration ; but the muscles of the body, such as the intercostals, the pectorals, and the psoæ, which were purposely examined after the condition of the diaphragm had been observed, were quite natural in appearance ; and the

same may be said of the voluntary muscles generally in the cases which remain to be described. A drawing of this diaphragm is in the museum of the hospital.—*Lancet, Jan.* 12, 1867, *p.* 39.

DISEASES OF THE ORGANS OF DIGESTION.

32.—ON DIPHTHERIA.

By Dr. W. Watson Campbell, Dunse.

[In the beginning of May, 1866, towards the end of his attendance upon a number of cases of diphtheria, Dr. Campbell caught the disease himself. At the commencement of the case, the nature of which he saw from the small white spots on each tonsil, he commenced with iron and wine, and used a gargle prepared with the permanganate of potash. At first the gargle was too weak, but on using it stronger the exudation disappeared. Complete recovery soon followed.]

On the 18th of May, I was asked to visit a young lady, residing at a distance of about eight miles, who was said to suffer from sore-throat. Here I may remark that her brother resided in the same street where the five cases last referred to occurred, and that he occasionally asked after the children, while they were ailing, as he passed along. He visited his home while the children were ill, and about ten days after he had been there, I was requested to attend his sister. I found her suffering from diphtheria. The exudation was very adherent, of a dirty yellow colour, and extensive,—covering nearly both tonsils, the rim of the velum, and the anterior surface of the uvula. She was very feverish and prostrate. She had a shivering three or four days before she was seen, and this was followed by sore-throat, which gradually got worse till I saw her. Deglutition was very painful, and articulation difficult and indistinct. In the treatment of this case I immediately began with a gargle of the permanganate of potash (gr. x. to the $\bar{3}$ xx.), recommending it to be used very frequently. To insure its application to the whole affected surface, she was told to swallow a little of it now and then, in order that, should there be any trace of the disease further down than could be seen, it might be flushed (if I may be allowed the expression) with it as often as a little of it was swallowed. Iron and port wine were also used. This patient never went back a day from this time, if we except the retardation of cure by sequelæ. Next day the exudation was very much less, and in four or five days it had entirely disappeared; and, though the throat was raw and tender-looking, I was much pleased to find matters going on as

they were. From the first application of the gargle her convalescence may be safely dated. From that time the pain began to subside, and deglutition and articulation became more easy. She went to the sea side about three weeks after my first visit, and though she had great weakness in the legs, and suffered from almost complete blindness from amaurosis for some time, she is now quite well.

I have no wish to extend this paper further than the subject requires, but must state that, since this last case came under my care, I have had other ten cases to attend, and that under the use of the permanganate-of-potash gargle, the tincture of the muriate of iron, and port wine, every one of these cases recovered rapidly. I would almost make one exception, and in this case—that of a lad about 18 years of age—there was only a slight weakness in the legs experienced for about fourteen days. Some of these cases I would certainly have despaired of without the aid of the permanganate of potash, so very severe did the attacks seem to be when I first saw them. At the present time I have a very bad case in hand. I was called upon to see him on the 30th October. He had a shivering on the night of the 25th. On making my first call, his pulse was rapid and wiry, his face pale and anxious-looking, his skin clammy and moist, deglutition very painful, and articulation very indistinct. The same treatment was adopted in this as in that of the young lady noticed above. I saw him again on the 2nd of November. He was clear and bright-looking, the pain was greatly relieved, and articulation was very much improved. He felt and continues to feel better ever since he used the gargle. I saw him on the 4th again. The exudation, which was of a dirty yellow colour and very adherent, was nearly gone, and the throat was rather raw-looking. Whether the improvement will continue or not remains to be seen, but I have great hope that he will do well.

Perhaps I may be excused for referring to two or three points in my experience of this disease, which are somewhat interesting.

The communication of infection is not necessarily direct. Indeed, in none of the cases I have seen did the disease seem to pass directly from one to another, unless where it spread in the family, as in the first cases I have noticed. On five well-marked occasions, it appeared to have been carried by a third party to a distance varying from one to eight miles. On one occasion it reappeared in the family of the woman attended first in September 1865, after an interval of six or seven months. Only during my attendance on the last two or three cases have I known scarlet fever to be present in the district.

In some cases of scarlet fever, I have seen whitish pellicles on the tonsils—not very unlike what I saw in my first case of diphtheria; but, otherwise, there was in every case quite enough

—even putting the rash out of the question—to distinguish the scarlatinal from the diphtheritic exudation.

In no case of diphtheria did I ever observe an abundant muco-purulent discharge from the nostrils; and though the tonsils are generally felt outside to be hard and large, yet I have never seen in this disease a single case of cervical cellulitis.

In all the cases of scarlatina where I have seen an exudation resembling that of diphtheria, there was not long afterwards a well-marked and frequently profuse discharge from the nostrils, and, in some of the cases, very extensive cervical cellulitis.

In some of the cases of diphtheria the exudation appeared to select, as its primary seat, the mucous membrane in the upper part of the larynx; and in some of these, by extension of the exudation, a modification of croup was caused.

In no case of scarlatina, even with intense throat affection, have I ever seen croupy symptoms arise to give evidence of the larynx being affected.

I am not aware that palsy is ever met with after scarlet fever, however severely the throat may have been affected, while palsy very frequently follows diphtheria.

Only in one case out of thirty-five that I have had under my care have I seen dropsy—œdema of the legs only—follow. Dropsy is comparatively frequent after scarlatina.

In such cases of diphtheria as I have tested the urine, the chlorides have never been found absent, and only in two or three cases have I detected albumen. In scarlet fever we expect a deficiency or absence of the chlorides, and are not surprised at the presence of albumen.

Notwithstanding all this, there may have been found, in the experience of others, more conditions common to both diseases than I have met with. I was certainly surprised at the reappearance of the disease in the same family after an interval of six months—a circumstance which has been known to occur in scarlatina.

With regard to the occasional resemblance of diphtheria to croup, I am disposed to think it accidental; and that the pellicle of the former differs from the false membrane of the latter in extent, in the rule of place, and in the latter being the result of true inflammation.

From my experience of this disease, I venture to differ from authorities such as Dr. Begbie, sen., and Dr. Jenner, with regard to the disease being constitutional. My opinion is that it is not so primarily, but that it becomes so, not so much, perhaps, by the absorption of poisonous matter from the seat of the exudation, as by the effect that the presence of such exudation may have on the nerve centres, through the nerves distributed to the part on which the exudation has taken place. It may be objected

that some cases have ended fatally without much local disturbance, and this by rapid prostration. Still the time required to effect this prostration, and the amount of exudation which will cause death in this way, may, as with other poisons, differ much in every case, whether acting indirectly or directly. The best reason, however, for supposing that the disease is local at first, is afforded by the success which has followed the local treatment, and also, by what was very apparent to me, that, on the whole, the more rapidly the local disease was removed, the less likely was the constitution to suffer.

Of twenty-three cases of diphtheria which occurred in my practice before I used the permanganate-of-potash gargle, ten died. Of the thirteen who recovered, four had paralysis to a greater or less extent. On the other hand, of the twelve cases which have occurred since (not including that under treatment) *none* died, and only *two* have had paralysis.

Since I thought of making this communication I have seen a letter from Dr. N. Evans, in the Medical Times and Gazette, of 27th Oct., in which the report of an interesting case is given, which corroborates very strongly my impression that the permanganate of potash may be safely allowed to exercise a remarkably beneficial effect when used perseveringly, and that even in the worst cases a cure may be hoped for, provided the larynx has not been affected.—*Edinburgh Medical Journal, Feb.* 1867, *p.* 727.

33.—ON CARBOLIC ACID IN DIPHTHERIA.

By Charles Sedgwick, Jun., Esq., Hollingbourn, Maidstone.

[Mr. Sedgwick has been in the habit of using diluted carbolic acid as a gargle in cases of diphtheria and ulcerated tonsils for the last four years. Although of a disagreeable taste he has not found that patients object to it after the first application, as it generally affords such great relief.]

I usually give it in the form of a gargle, but in children by swabbing the throat out freely with it on a piece of sponge. When the disease has been taken early I have not failed in a single case, but have lost some where it had gone too far for medical treatment to be of any service. Carbolic acid has a decided effect upon the false membrane thrown out. The following is the form I usually prescribe:—℞. Acidi carbolici ℥xx., acidi acetici ℥ss., mellis ℥ij., tinct. myrrhæ ℥ij., aquæ q. s. ut fiat gargarisma ℥vj. The carbolic and acetic acids to be well shaken together, the mel to be added with the aqua gradually. With it I usually give tinct. ferri and quinine.—*Medical Times and Gazette, Feb.* 27, 1867, *p.* 216.

34.—BENEFICIAL EFFECT OF BELLADONNA IN A CASE OF SEVERE COLIC AND CONSTIPATION.

Under the care of Dr. MURCHISON, at the Middlesex Hospital.

[The patient was a married woman, 27 years of age. She had always enjoyed good health with the exception of an attack similar to the present one about two years before. The present attack commenced ten days before admission, with severe pains in the abdomen of a paroxysmal character, and always worse at night.]

From the first the attacks of pain had often been accompanied with violent vomiting; but for seven or eight days the bowels had acted daily. For at least two days before admission the bowels had not acted.

On admission, the patient was in great distress with pain in her abdomen and back, which bent her up double. The pain was paroxysmal, but the paroxysms followed one another in rapid succession. She described the pain as shooting from the abdomen down the anus as well as the legs. The urine contained no blood. There was not a trace of jaundice, and no tenderness of abdomen; but the paroxysms of pain were accompanied by violent retching and bilious vomiting. The pulse was 72; the skin felt cool; no external hernia could be discovered; and there was no blue line along the edge of the gums. The patient on admission was ordered a warm bath, poultices with laudanum to the abdomen, a large castor-oil enema twice a-day, and a draught every four hours containing twenty minims of laudanum and of chloric ether in an ounce of peppermint water.

On Dec. 30th she had taken in the course of two days nearly half an ounce of laudanum, besides having a quarter of a grain injected into the skin; and she had had five copious injections of gruel and castor-oil, and two warm baths. But there had been no action whatever of the bowels, and the vomiting and pain continued as urgent as ever, so that she had had no sleep since admission. In addition, the pulse had risen to 108, the skin felt hot, the patient was more depressed, and there was decided tenderness of the left groin. Twelve leeches were now ordered to be applied to the abdomen, followed by linseed poultices: and a mixture was prescribed, consisting of castor-oil, half an ounce; liquor potassæ, twenty minims; tincture of opium, twenty-five minims; and peppermint water, an ounce and a-half: to be taken every sixth hour.

The tenderness of the abdomen was considerably relieved by the leeches; but on Jan. 1st the patient had taken eight doses of the mixture, or four ounces of castor-oil and nearly three and a half drachms of laudanum, which had been retained, but without any action of the bowels, and with but little relief to

the pain or vomiting. The patient was now ordered a pill containing half a grain of extract of belladonna every four hours, with belladonna ointment to the abdomen, a warm bath at night, and a castor-oil enema twice a-day.

On the following morning, after taking four of the pills, and the pupils being moderately dilated, the patient had a copious feculent motion. This was the first action of the bowels for at least a week, and from that moment the pain and vomiting subsided. The pills were repeated twice daily, and the bowels continued to act regularly and copiously. On Jan. 8th the patient was discharged well.—*Lancet, Jan.* 19, 1867, *p.* 81.

35.—ON ENLARGEMENTS OF THE LIVER.

By Dr. Charles Murchison, F.R.S., Lecturer on the Practice of Medicine and Physician to the Middlesex Hospital.

[In the following article those cases of hepatic disease are considered in which the enlargement is real (in some cases enlargement is simulated). Many divisions of these cases have been made, as Dr. Bright's, into smooth and irregular enlargements. Dr. Murchison thinks a division into painless and painful less open to exception.]

Among painless enlargements we have the so-called amyloid liver, the fatty liver, hydatid tumour of the liver, and simple hypertrophy.

Among enlargements in which pain is a prominent symptom we have congestion, catarrh of the bile-ducts, obstruction of the common duct and retention of bile, pyæmic abscesses, tropical abscess, and cancer.

The distinguishing characters of these several forms of enlargement may now be considered in detail.

I. *The waxy, lardaceous, or amyloid liver.*—The liver undergoes greater enlargement from the so-called waxy, or amyloid deposit, than from any other disease, excepting, perhaps, cancer. I have known the liver of an adult affected with this disease weigh upwards of 180, instead of 50 or 60 ounces, and the liver, of which I show you here a portion, weighed one-seventh, instead of a twenty-fifth, of the entire body of the child from whom it was taken. Enlargement of the liver due to waxy or amyloid deposit may be recognised during life by the following characters:—

1. The enlargement is often great, so that the liver fills up a large portion of the abdominal cavity.

2. It is uniform in every direction, so that the form of the organ is not essentially altered. The area of hepatic dulness on percussion is increased in the median, dorsal, and axillary

lines, as well as in the right mammary. The increase is greater in front than behind, because in the former situation there is greater room for growth. It is increased in an upward as well as in a downward direction, although mainly in the latter. the lower margin often reaching the umbilicus, or even the right groin ; but nowhere is there any outgrowth from the normal contour. The abdomen is enlarged, and often there is a visible tumour below the right costal arch and in the epigastrium, but rarely, if ever, is there any bulging of the ribs themselves. Waxy enlargement of the liver moulds itself over adjacent organs, and has little tendency to cause displacement of the ribs by eccentric pressure.

3. On palpation, the portion of liver which extends below the margin of the ribs is very dense, firm, and resistant. There is no elasticity, and still less any feeling of fluctuation.

4. The outer surface is smooth, and the lower margin is more rounded than natural, regular, and free from all indentation. In this respect, however, rare exceptions occur, an ignorance of which may lead to errors in diagnosis. In rare cases waxy deposit in the liver coexists with cirrhosis, or with what are are known as syphilitic cicatrices, and then the surface of the organ may be nodulated, or even broken up into irregular lobes, separated by deep fissures, the existence of which may lead to the suspicion that the enlargement is due to cancer. In cases also of extreme enlargement they may be an exaggeration, so to speak, of the lobes into which the liver is naturally divided, deep fissures corresponding to the attachment of the ligaments. Some of you had an opportunity of observing a case of this sort under the care of my colleague Dr. Greenhow, the particulars of which are given below. Cases have also been recorded by Professor Frerichs of Berlin, in which a waxy liver has presented a more or less lobulated form.

5. Waxy deposit in the liver has but little tendency to obstruct the portal circulation, and consequently ascites and enlargement of the subcutaneous veins of the abdominal wall are not common phenomena in its clinical history. When such indications of portal obstruction do occur, they are often due to pressure exerted on the trunk of the portal vein by lymphatic glands in the fissure of the liver enlarged from waxy deposit. Occasionally, also, fluid is effused into the peritoneum as the result of secondary peritonitis.

6. Jaundice is a rare symptom in waxy disease of the liver ; and when it occurs, it is due for the most part to the pressure on the bile ducts of enlarged lymphatic glands, or to the coexistence of catarrh of the bile ducts.

7. Pain and tenderness are never prominent symptoms. The liver can be manipulated with impunity, and the patient complains only of a feeling of weight or tightness in the right hypochondrium, or of uneasiness from the pressure to which the stomach and intestines are subjected. But occasionally, and particularly where there is a syphilitic history, there is an attack of acute pain from intercurrent peri-hepatitis. In a case now under your notice the enlargement commenced in India, with severe pain in the right side, for which numerous leeches were applied; but the enlarged liver now exhibits its usual painless character. Frerichs also records a case where the disease supervened on protracted ague, and where "the first symptom was persistent cutting pains in the side."

8. The growth of the tumour is slow and imperceptible. It usually extends over several years.

9. Constitutionally, the symptoms are chiefly those of anæmia. There is no pyrexia; but the countenance is pale and sallow, the patient suffers from general debility, and the proportion of white corpuscles in the blood is slightly increased.

Other characters of no small moment in diagnosis, are derived from the spleen, the kidneys, the stomach, or the intestines being the seat of a similar morbid deposit to that producing the hepatic enlargement.

10. The spleen in most cases is enlarged, and often greatly, as well as the liver.

11. Waxy disease of the kidneys has peculiar characters of its own the presence of which in any case of hepatic enlargement would alone make it very probable that this enlargement was due to waxy deposit. These characters are—

a. An increased quantity of urine. Not uncommonly the patient voids three or five pints of urine in the twenty-four hours. This is the rule throughout the greater part of the course of the disease. Towards the termination only is the quantity diminished

b. The urine is pale, of moderately low specific gravity (about 1012), free from any smokiness, and contains a considerable amount of albumen.

c. Casts of the renal tubes are often absent. When present, they may be of an epithelial or hyaline character; usually the latter. These hyaline casts, so far as my observation goes, never yield the so-called amyloid reaction with iodine and sulphuric acid; but, in exceptional cases, this reaction may be observed in some of the cast-off renal cells.

The persistent secretion of a large quantity of urine containing

much albumen by a person who has never had general anasarca, will of itself warrant the presumption that the individual is suffering from waxy disease of the kidneys. In the contracted or gouty kidney there may also be no dropsy, and the quantity of urine may be increased; but then the specific gravity is remarkably low (often not exceeding 1002 or 1005), and albumen is present as a mere trace, or may be entirely absent.

12. The implication of the stomach and intestines in the waxy disease induces a tendency to vomiting and to obstinate diarrhœa from slight causes. Occasionally this diarrhœa is accompanied by tenesmus, and the patient may be thought to labour under dysentery; but post-mortem examination reveals no evidence of inflammation of the bowel. The diarrhœa appears to result from deficient absorption rather than from increased exhalation.

13. Here, as in many other maladies, the circumstances under which the disease usually makes its appearance are of considerable importance in diagnosis. Now there are certain conditions of the system which pre-eminently favour the advent of waxy disease. Among them may be mentioned the following:—

a. Long-standing purulent discharge, such as is particularly apt to happen in connexion with diseased bone or joints, and after surgical operations when the wound does not readily heal.

b. Constitutional syphilis. In a large number of cases of waxy disease the patients have been the subject of constitutional syphilis, which appears to act as a predisposing cause quite independently of its inducing disease of the bones or protracted discharges.

c. Tubercle of the lungs and of other organs must be regarded as a predisposing cause of waxy degeneration, although the enlargement of the liver common under such circumstances is oftener fatty than waxy. Of 52 cases of persons dying from tubercle, and whose autopsies I have recorded, the liver was fatty in 20, and waxy in 6, and in 3 of the 6 there was likewise caries of the bones. Still, of the 52 cases, 14 had waxy disease of either the kidneys, the liver, or spleen; or one in $3\frac{5}{7}$. The proportion of tubercular males in whom waxy disease was found was more than double that of females. Thus, of 33 tubercular males, there was waxy disease in 11, or 1 in 3; whereas of 19 tubercular females, only 3, or 1 in $6\frac{1}{3}$, had waxy disease.

d. Many chronic diseases that seriously impair the general nutrition probably predispose to waxy degeneration, which has thus been met with as an occasional sequel of protracted ague, cancer, &c.—*Lancet, April* 6, 1867, *p.* 413.

DISEASES OF THE URINARY ORGANS.

36.—ON THE TREATMENT OF DIABETES MELLITUS.

By Sir Henry Marsh, M.D., Bart., Physician in Ordinary to the Queen in Ireland.

A perfectly successful mode of treatment yet remains to be discovered. Every step which is made towards the attainment of this desirable object, is in itself valuable, and may also lead to still further advances; till, at length, we may become possessed of the ability to rescue a considerable proportion of those who are affected with the disease, from a lingering and miserable death.

A well-marked case of the diabetes was, not long since, placed under my care. From the wish to afford all possible relief, I anxiously referred to every source whence useful information might probably be derived, and was thereby led to an attentive perusal of the several treatises and detached cases of this disease, which have, from time to time appeared. In the works of the older writers, little, if any valuable matter respecting the treatment will be found; indeed, until the period at which Dr. Willis made the curious discovery of the existence of sugar in diabetic urine, all the recorded histories of this complaint are marked by vagueness and uncertainty; and are as applicable to any form of diuresis, as to that in which the urine is saccharine. While employed in turning over the several works written on this subject, my attention was particularly arrested by the following important considerations: First, in many of the cases whose histories are recorded, the earliest disturbance in the general health could distinctly be traced to some cause acting upon the skin, and producing derangement of its functions. Secondly, *every* case of the diabetes mellitus is accompanied with a peculiarly morbid condition of the skin. In truth, I know not any disease in which this symptom is so uniform and so remarkable. Thirdly, none of the remedies employed produced the slightest beneficial effect, until the skin began to relax, and a sweat to appear on the surface.

These considerations led me to turn my attention more particularly to the state of the skin, and suggested the probability of advantage arising from the application of *vapour* to the whole surface of the body. The vapour bath was employed. The impression made upon the disease by the frequent use of this remedy surpassed my expectations. Its salutary effects, in giving a new action to the skin, were immediately perceptible. The perspiration having been afterwards maintained by warm clothing, and continued bodily exercise, the patient daily im-

proved in health; and at length quitted the hospital, under the conviction of his disease being wholly removed. Before entering upon the particulars of this case, I shall briefly state two observations obtained, the one from Dr. Rollo's book, the other from a treatise written by Dr. Latham. These observations appear to me peculiarly important; as in both instances, the only operative remedies were those which established upon the surface an abundant perspiration. In the first, the effect was produced by the tepid bath; in the second, by bodily labour. To these facts an additional value should also be attached, because, unwarped by any theory, they are simply and as it were accidentally stated.

In the second edition of Rollo on Diabetes, p. 183, there is a communication from Dr. Gerrard of Liverpool. In the case given by Dr. G., the first observable symptom was a diminution of habitual perspiration; afterwards it totally ceased; and at length the "the cuticle became unnaturally dry, harsh, and rough, and to all appearance dead, and incapable of perspiration, absorption, or any kind of transmission." With this state of the skin was connected the ordinary symptoms; thirst, increased appetite, languor, debility, and saccharine diuresis.

In the sole view of determining, by experiment, the existence or non-existence of cutaneous absorption, this patient was immersed, every successive or alternate day, in water raised to a pretty high temperature; the weight of his body having been carefully ascertained, both before and after each immersion. An attempt was made to restrict him to animal diet: medicine of every kind was intentionally withheld. The warm bath was first used on the 12th of February. On the 22nd, there was a considerable diminution of the quantity of urine; its smell was urinous, and the extract less sweet; the weight of the body was increased, and, it was observed, the dead cuticle began to come off.

24th. On this day he used the bath at the temperature 100°, and remained in it fourteen minutes.

25th. "The dead cuticle is peeling off; and he is obviously improving in every respect, and gaining weight." Bath continued at the same temperature, and employed every day till the 20th of March.

For several days, at the beginning of March, he lost ground, in consequence (as I conceive) of considerable disorder in the stomach and bowels. During the continuance of this derangement in the functions of the abdominal viscera, the cuticle did not come away as before, nor did the patient sweat. On the 21st of March, the non-existence of cutaneous absorption having been satisfactorily proved, the warm bath was laid aside.

28. "He has had a considerable and general perspiration last night; his thirst and appetite are moderate, and he is quite free from pain." At this time the disorder of the bowels appeared to subside; the functions of the skin became more natural; and he began evidently to gain ground.

April 7th. He used the warm bath to cleanse his skin, when a large quantity of the dead cuticle came off. Cold bath ordered.

8th. Urine four pounds thirteen ounces; it is not sensibly sweet. He felt very warm and comfortable after the cold bath, and rested well at night; his appetite and thirst are moderate. He was now a second time thrown back by disorder in the digestive organs; but soon afterwards he began again to improve.

29th. Urine three pounds three ounces. "He had a copious perspiration in the night, which continued about four hours."

May 1st. "He perspired much in the night, but it does not weaken him."

6th. On this day it was discovered, that the patient did not adhere to the plan of animal diet longer than the first fourteen days. During the remaining (as is distinctly stated by the author himself) "he partook with the other patients, in the common mixed diet of the house."

17th. "Urine four pounds ten ounces; it is neither sweet, nor in any over proportion to the fluids taken in; nor will it ferment, although he has lived chiefly on vegetable matter and milk, since the 6th instant. He has had copious perspirations these two nights past."

25th. "He was discharged from the Infirmary, to all appearance cured of the disease; which, to his own thinking, has long been the case; and to the opinion of his being *even cured*, I have no hesitation in subscribing."

This case, the details of which are in Dr. Rollo's book, possesses peculiar value. Medicine was not administered; nor was animal diet, except during the first fourteen days, adhered to; and yet there is here presented to us as perfect an instance of recovery as any on record. To what then is the cure of this patient to be ascribed? Not certainly to a few days' adherence to animal diet; for it was nearly three months after the exclusively animal regimen had been laid aside (and at a time too, when the diet was chiefly vegetable) that the most marked and decided amendment of the symptoms was manifested. Since, therefore, no medicine was given, and little, if any effect, can justly be attributed to the short restriction to animal diet, it obviously follows that the warm bath (which was not used as a remedy, nor was its efficacy in the least suspected) was, in reality, the one and only efficient means of cure. This opinion is likewise corroborated by the fact, that, in the same proportion as

the morbid cuticle was detached, and abundant perspiration established, so did all the symptoms of the disease subside. The second observation derived from Dr. Latham's book, I shall quote in his own words :—

"The first case I remember to have seen, was in the Radcliffe Infirmary at Oxford, under the care of the late Dr. Parsons, then Clinical Lecturer in the University; the impression of its being an incurable disease, which the medical pupils received from the Professor, was sufficiently fixed in their minds by the inefficacy of the remedies which were from time to time prescribed for the patient's relief; worn out with expectation, and despairing at last of receiving any benefit, he was at his own desire put upon the list of out-patients, and requested to come occasionally to the Infirmary, that the pupils might have the opportunity of seeing the progress of the disease, rather than with any expectation of a prosperous issue to the complaint: a few weeks elapsed before he returned to us, and to the great astonishment of all we found him improved, not only in his appearance, but also very materially in the urinary discharges. His own account was, that, weary of life, and destitute of every ray of hope, he had wandered about, as well as his strength would allow him, for a few days amongst his fellow-labourers of the neighbourhood, and finding, from this exertion, that his strength did not decrease, he was tempted to take a part in the work that was going forwards; that a copious perspiration very soon ensued, under which he did not feel himself weakened in bodily powers, but rather improved in spirits; that he renewed the same sort of easy occupation from day to day, with the same comfortable event; and that at last not only his spirits but his bodily strength was manifestly increased; his urine, however, was then neither perfectly natural in smell or taste or quantity, although in all these respects it was certainly much amended. He visited the Infirmary a few times afterwards at irregular intervals, and at last ceasing to attend, we concluded, from the progress made towards recovery, whilst he continued his attendance, that he probably had been fortunate in experiencing a cure. And had we been then as convinced of the efficacy of animal food in diabetes as we now are, we should probably have thought that the provincial diet of that district might possibly have contributed to his relief, for the poorer sort of labourers usually lived upon a large onion with fat bacon, and no great portion of bread." I fancy the reader will be disposed rather to attribute the amendment in the state of this patient's health, to the free perspiration caused by bodily labour, than to the large onion, or even the fat bacon.

I shall now proceed to relate the principal facts of the case of the diabetes mellitus, which I have lately had under my care;

and which strongly illustrates the value of those remedies, by which a copious and continued diaphoresis is most certainly produced.

—— Riddal, aged 20, a shoemaker; hair and eyes dark; conjunctiva clear and pearly; lines of the muscles distinctly marked; complexion sallow; emaciation extreme; veins prominent and full; skin a dingy yellow, permanently arid, and glued apparently to the subjacent muscles; gums ulcerated; a small unhealthy ulcer on the right cheek; epigastrium tumid; tongue florid at margin and point, and covered in other parts with a thin whitish secretion; extreme listlessness, languor, and debility; a sensation of weakness (referred to the knees) so great, that it is with difficulty the weight of the body is supported; dimness of vision; sleep broken and disturbed; he is much distressed during the night by spasms in the lower extremities; though constantly placed before a large fire, a sensation of creeping coldness is always present. Appetite inordinate; thirst unquenchable; mouth clammy; digestion rapidly performed; a craving sensation recurs soon after food has been taken; costiveness; there is a constant desire to pass water, which is increased during the night. From twenty to twenty-two pounds of urine are passed ordinarily during the twenty-four hours; the bubbles remain on its surface; it is limpid and almost colourless; its smell peculiar, and not easily to be described; its taste very sweet; when evaporated there remains an abundant extract resembling coarse brown sugar; pulse 88, full and throbbing; neither cough nor dyspnœa; such were the symptoms which manifested themselves at the time of his admission into hospital, which was towards the end of the month of December.

I obtained from him the following account of the state of his health, previously to the time of his admission: In the beginning of last November, he embarked at Liverpool, in a vessel destined for Dublin. He was then in perfect health; a violent storm came on; the loss of the vessel was hourly expected. He was four days at sea, and during the greater part of that time was to his knees in water; he was chilled with cold; and for the last two days there was not any supply of provisions. After quitting the vessel, he felt himself constantly chilly, and could not by any means (to use his own expression) "get warmth into him." A thirst so intense came on, that he was perpetually swallowing large draughts of water; he preferred cold drinks. In describing the symptoms, he dwelt a good deal upon an unusual dryness of the skin, and a total absence of perspiration, since the time of his sea voyage; his sight also grew dim; his bowels were costive. In consequence of the excessive keenness of his appetite, his complaints became a subject of ridicule;

languor and debility, notwithstanding the large supplies of food, daily increased; and at length he found himself so weak, that he was obliged to abandon his ordinary occupation, and make the best of his way to town to seek relief.

On the first of February, ten ounces of blood were removed by the lancet; the serum was milky; the crassamentum firm; the loss of blood did not in any manner affect the symptoms. From this time, on to the 2nd of March, mercury was used, externally and internally, in large quantities; no fetor of the breath, no increased secretion of saliva, nor any other symptom indicating the presence of mercury in the system, was perceptible. Only whilst using that medicine, he evidently lost ground and became, by degrees, so very weak, that he was no longer able to leave his bed. His bowels were regularly evacuated by doses of castor oil and tincture of senna. His diet was chiefly vegetable; his ordinary drink the inf. lin. and water.

On the 2nd of March the vapour bath was used for the first time. No very perceptible effect was produced. This remedy was repeated on the 9th, 12th, 16th, and 26th. The symptoms still unabated: there was, perhaps, some slight accession of strength.

From the 2nd to the 27th of April, all treatment, except daily purgation, was laid aside. The flow of sweet, and almost colourless urine, in the course of the day and night, often exceeded twenty-four pounds. The necessity of assuaging his thirst, and voiding his urine, was so continual during the night, that he could scarcely obtain any sleep. He was now reduced to a state of alarming debility. On the 27th of April, he was again placed in the vapour bath; half an ounce of the tincture of opium was mixed with the water which was to be converted into vapour. He remained in the vapour-bath twenty minutes. On being replaced in bed, syncope came on, from which he recovered very slowly; he then became feverish and hot; at length the skin gave way, and the whole surface of the body was soon covered with sweat. He felt, he said, immediately relieved; and on the following day was much better.

On the 4th of May, he was again put into the vapour-bath, to which the tincture of opium, as before, was added. There was not on this occasion, any tendency to faintness: it excited copious perspiration, and he had a sound and refreshing sleep.

On the 10th of May, the following note was taken of his case: Strength improves daily; he feels much less languid; skin soft and perspiring; pulse 88; a whitish secretion covers the tongue; appetite less craving; improved sleep; he grows fat; gums continue ulcerated and sore; and the ulcer on the inferior maxilla is still open.

May 18th. The urine, almost colourless and very sweet, amounted during the preceding day and night, to full twenty-four pounds. His thirst was very urgent. His weight on this day was seven stone ten pounds.

May 22nd. A temporary diarrhœa, with griping pain, was produced by repeated doses of colocynth pill. The urine, during the increased action of the bowels, was observed to assume an amber colour, and to acquire a urinous odour, to be much diminished in quantity, and to have a taste less sweet. The tongue was cleaner; the fæces yeasty; the mouth parched; no perspiration; skin very itchy.

May 30th. Urine, though more amber-coloured, amounts to twenty-one pounds; pulse 100; no perspiration; an exclusively animal diet, with lime-water and milk, had been for some time enjoined: the patient, however, devoured in secret whatever of vegetable food he could procure; he said that much meat at a time lay heavy on his stomach, and greatly oppressed him.

June 3rd. A remarkable change in the symptoms was observed; for the last twenty-four hours the urine did not exceed eight pounds; during the preceding day and night perspiration flowed generally and profusely; there was a great accession of strength, and diminution of thirst and appetite. The abundant and continued sweating was produced by laborious exercise, while the body was enveloped in thick flannel, and the weather unusually warm. The first efforts at bodily labour were difficult and reluctant. The patient in the morning, when commencing the work of the day, could hardly move his spade; he was however, prevailed on to persevere; by-and-bye he began to work with more ease to himself; and before the close of the day, when perspiration was fully established, the labour was easy and the fatigue trifling. From this period to the beginning of July, medicine of every kind was abandoned. He worked very hard every day; was warmly clad, and sweated much. His food was principally vegetable; he daily gathered strength and weight; enjoyed sound and undisturbed sleep, and felt himself so far relieved, that he was resolved to return immediately to his home and former occupation. From the slightly saccharine taste of the urine, and the continued ulceration of his gums, I strongly urged that he should not yet remove himself from medical superintendence.

July 27th. Bowels costive; urine sweet, light-coloured, and moderate in quantity; tongue much cleaner; free perspiration; he rose but once during the night; thirst, though much abated, continues; weight eight stone thirteen pounds. For several days past he had ceased to work; the vapour bath has not been used, nor any medicine given; a perspiring state of the skin, however, has continued.

August 4th. He has been for some days restricted to a diet exclusively animal; he has adhered strictly (as far as I could learn) to the regimen prescribed; his ordinary drink was milk with lime-water and beef-tea; the weather was very warm, and the patient's body entirely enveloped in thick flannel. An itchy, slightly-elevated, pale-red eruption was thickly and universally diffused over the surface of the body. His pulse beat steadily 120 stokes in a minute, and was throbbing and full.

August 10. Pulse still 120. Diet consists in eggs, beef, mutton, soup, and milk. The serum of blood taken yesterday from his arm was white, like milk; sixteen ounces of blood were at that time removed; his strength, by this evacuation, was not in any degree impaired; the pulse fell to 104; perspiration continues; urine, within the last twenty-four hours, has amounted to eight pounds; the taste not sweet; the colour a deep amber; sleep natural. This day he complains of thirst, which has not been the case for several days past.

On the 12th of August, after a meal of fat meat, he was seized with severe vomiting and retching, and spent a feverish and restless night. On the following day, the pulse throbbed strongly, and rose to 120; he loathed food of every kind, had intense headache, panted for breath, and seemed like one suffocating. Fourteen ounces of blood were removed; the appearance of the serum was altogether altered; it was now perfectly transparent, and had a slightly greenish tinge; those urgent febrile symptoms he attributes to the animal regimen, from which he had not for some days deviated. He said that fat or rich meat particularly disagreed with him. Urine slightly saccharine; much more deeply coloured, and considerably less abundant; skin thickly covered with an eruption of the same nature as that already described. The dyspnœa was so urgent that it gave to his countenance an expression of wildness. He was very restless, and continually changed his position. His skin was intensely hot. The flannel dress was laid aside, and he lay uncovered, except by a single sheet. His thirst was not to be appeased, and his appetite was wholly extinguished; the epigastrium was tumid and painful. By pressure at that region of the abdomen, the dyspnœa and suffocative sensation were very much augmented. Leeches were frequently and numerously applied at the epigastrium; the bowels maintained in a lax state by the daily exhibition of purgatives, saline draughts repeatedly administered, and opium, in large doses, given at night. After each application of the leeches, the respiration became freer and easier. In a few days, the febrile symptoms subsided, and left him weak, languid, and emaciated. The rapidity, however, with which he regained health and strength after the cessation of febrile

action was remarkable: his skin continued soft and moist, but not profusely perspiring; his pulse did not rise beyond eighty in a minute; his sleep was undisturbed; his appetite moderate; and there did not remain any inordinate thirst. The quantity of urine varied from six to eight pounds, during the day and night; it was rather light-coloured; the taste salt and slightly sweet; he weighed eight stone four pounds. Under these circumstances, towards the end of the month of September, he quitted the hospital. I saw him on the first of January, 1822. There was not any return of the symptoms; the skin retained its natural and softened feel; he weighed eight stone five pounds; his pulse was moderate; the expression of his countenance very much improved; though not exempt from thirst, it gave him no annoyance; his tongue was whitish; he felt strong, and alive to every enjoyment; he worked at his trade as a shoemaker, from an early hour in the morning, with little intermission, until late at night; his diet consisted of bread, butter, occasionally meat, fish, potatoes, and gruel; the gums were very slightly ulcerated; the bowels without medicine, were daily evacuated; the general quantity of urine, in the course of a day and night, varied from six to seven pounds; taste salt, slightly saccharine; colour still paler than natural.

Such are the leading facts which belong to this case. I regret that the specific gravity of the urine was not at any time ascertained, and that this fluid was not, during the progress of the disease, subjected to chemical analysis. Attention to these points would have rendered the history of the case much more complete. Such as it is, however, it exhibits, in a striking point of view, the powerful effects of copious perspiration, produced by the vapour-bath and muscular exertion, in controlling and restraining the symptoms of the diabetes. That many have attempted the cure of this disease, by diaphoretic remedies, I am well aware; but the attempt has been made rather through the medium of medicines taken into the stomach, than by means of remedies designed to act directly upon the skin. That internal remedies should have failed is not surprising, when we consider that the constitution of a person labouring under this affection will resist the action of the most powerful medicines, even when exhibited in the largest doses. It is singular to what an extent opium, antimony, and other drugs may be administered, and yet little or no effect be produced. The warm-bath has been used—but it has been used only occasionally; it has been employed as a secondary remedy, as one of minor importance, and not as one, which, if properly managed, is of itself sufficient to effect a cure. Its daily employment for weeks, nay months, may be requisite to bring about that relaxed and freely perspiring state of the skin, without which, whatever temporary

abatement in the symptoms, or diminution in the flow of urine, may have taken place, not one step has, in reality, been made towards the accomplishment of a cure.—*Medical Press and Circular, Jan.* 16, 1867, *p.* 49.

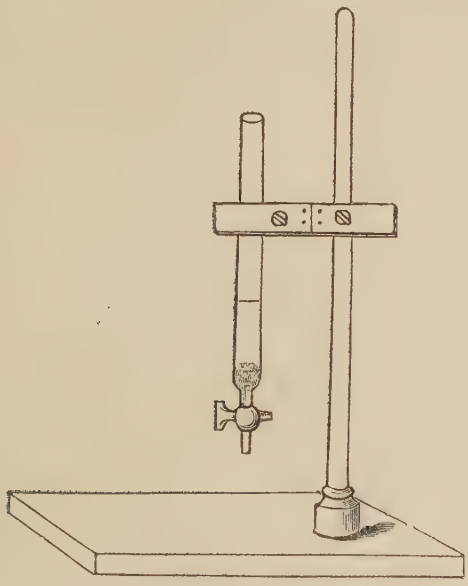
37.—A SEDIMENT TUBE FOR THE MORE READILY COLLECTING FROM THE URINE TUBE CASTS AND OTHER OBJECTS FOR MICROSCOPIC EXAMINATION.

By Dr. W. R. Basham, Physician to the Westminster Hospital.

I have frequently suffered so great a loss of time in searching for tube-casts and other objects of interest in the urine of those suffering from renal disease, that I venture to think that a very simple apparatus which I have adopted for obtaining the lowest portions of the sediment, without disturbance of the upper portion, and thus finding, without loss of much time, the objects sought for, may be found of service to the profession, and particularly to microscopic observers.

It frequently happens, in using the ordinary conical-shaped urine glass for collecting the sediment in urines, that in pouring off the upper stratum the sediment is so disturbed and the objects so diffused, that drop after drop is placed on the microscope stage with a negative result. It requires a large amount of patience to go through some eight or ten sample drops and find nothing, and still to persevere till rewarded by finding an object typical of the stage or form of disease from which the patient is suffering. I have for some time used a sediment tube of glass constructed with a tap, by turning which only the lowest portion of the sediment, and that which is richest in microscopic objects, is permitted to fall on the glass stage of the microscope. By this means no disturbance of the sediment can occur from pouring off, and the minutest sized drops can be brought into view. The accompanying woodcut will best illustrate the simplicity of this method. The tube should be about three-quarters of an inch in internal diameter, and, including tap and orifice, ten inches long. It may be kept in perpendicular position by any ordinary tube support. The most advantageous mode of using this sediment tube, if the quantity of urine to be examined microscopically be six or eight ounces, is to pour this into an ordinary conical-shaped urine glass, and allowing this to rest for an hour or more, carefully to decant off to within about two ounces, and pour this into the sediment tube. The sediment in an hour or two will have collected sufficiently, and by turning the tap a minute drop may be allowed to descend on to the microscope stage, and being covered with a slip, will be

found to exhibit whatever microscopic objects of importance may be contained in the urine. A great saving of time is thus gained, and where formerly I have spent an hour or more in,



perhaps, fruitlessly searching through samples of urines from different patients, I now can satisfactorily complete the examination in a few minutes. Messrs. Griffin and Sons, of Garrick-street, Long-acre, have made these tubes for me, and they can be supplied by them for a few shillings.—*Lancet, March* 2, 1867, *p.* 269.

38.—MOVEABLE KIDNEY.

Moveable kidney is not unfrequently diagnosed during life, but it is rarely that we have an opportunity of seeing this abnormality after death; indeed, some authorities throw great doubt upon its occurrence at all. It has happened more than once that cases in which this diagnosis was confidently made have proved after death to be cancerous disease of the stomach.

A few weeks ago, however, Mr. N. Heckford accidentally came across a well-marked instance of this peculiarity in the body of a woman who had died of apoplexy. The right kidney was freely moveable in any direction—so much so that it could be pushed on to the vertebral column. The left resembled its fellow in this respect, but in a far minor degree. Within a fortnight after this, a second example of this condition was discovered after death. As in the former case, the right kidney was the more mobile of the two.—*Lancet, March* 23, 1867, *p.* 363.

SURGERY.

AMPUTATIONS, FRACTURES, ETC.

39.—ON A NEW METHOD OF TREATING COMPOUND FRACTURE, ABSCESS, &c.

By Joseph Lister, Esq., F.R.S., Professor of Surgery in the University of Glasgow.

[How is it that an external wound leads to such grave results in cases of fracture? Is it not probably by the atmosphere inducing decomposition of the blood which is effused in greater or less amount around the fragments and among the interstices of the tissues, and, losing by putrefaction its natural bland character, and assuming the properties of an acrid irritant, occasions both local and general disturbance.]

We know that blood kept exposed to the air at the temperature of the body, in a vessel of glass or other material chemically inert, soon decomposes; and there is no reason to suppose that the living tissues surrounding a mass of extravasated blood could preserve it from being affected in a similar manner by the atmosphere. On the contrary, it may be ascertained as a matter of observation that, in a compound fracture, twenty-four hours after the accident the coloured serum which oozes from the wound is already distinctly tainted with the odour of decomposition, and during the next two or three days, before suppuration has set in, the smell of the effused fluids becomes more and more offensive.

This state of things is enough to account for all the bad consequences of the injury.

The pernicious influence of decomposing animal matter upon the tissues has probably been underrated, in consequence of the healthy state in which granulating sores remain in spite of a very offensive condition of their discharges. To argue from this, however, that fetid material would be innocuous in a recent wound would be to make a great mistake. The granulations being composed of an imperfect form of tissue, insensible and indisposed to absorption, but with remarkably active cell-development, and perpetually renovated as fast as it is destroyed at the surface, form a most admirable protective layer or living

plaster. But before a raw surface has granulated, an acrid discharge acts with unrestrained effect upon it, exciting the sensory nerves, and causing through them both local inflammation and general fever, and also producing by its caustic action a greater or less extent of sloughs, which must be thrown off by a corresponding suppuration, while there is at the same time a risk of absorption of the poisonous fluids into the circulation.

This view of the cause of the mischief in compound fracture is strikingly corroborated by cases in which the external wound is very small. Here, if the coagulum at the orifice is allowed to dry and form a crust, as was advised by John Hunter, all bad consequences are probably averted, and, the air been excluded, the blood beneath becomes organised and absorbed, exactly as in a simple fracture. But if any accidental circumstances interferes with the satisfatory formation of the scab, the smallness of the wound, instead of being an advantage, is apt to prove injurious, because, while decomposition is permitted, the due escape of foul discharges is prevented. Indeed, so impressed are some surgeons with the evil which may result from this latter cause, that, deviating from the excellent Hunterian practice, they enlarge the orifice with the knife in the first instance and apply fomentations, in order to mitigate the suppuration which they render inevitable.

Turning now to the question how the atmosphere produces decomposition of organic substances, we find that a flood of light has been thrown upon this most important subject by the philosophic researches of M. Pasteur, who has demonstrated by thoroughly convincing evidence that it is not to its oxygen or to any of its gaseous constituents that the air owes this property, but to minute particles suspended in it, which are the germs of various low forms of life, long since revealed by the microscope, and regarded as merely accidental concomitants of putrescence, but now shown by Pasteur to be its essential cause, resolving the complex organic compounds into substances of simpler chemical constitution, just as the yeast plant converts sugar into alcohol and carbonic acid.

A beautiful illustration of this doctrine seems to me to be presented in surgery by pneumothorax with emphysema, resulting from puncture of the lung by a fractured rib. Here, though atmospheric air is perpetually introduced into the pleura in great abundance, no inflammatory disturbance supervenes; whereas an external wound penetrating the chest, if it remains open, infallibly causes dangerous suppurative pleurisy. In the latter case the blood and serum poured out into the pleural cavity, as an immediate consequence of the injury, are decomposed by the germs that enter with the air, and then operate as a powerful irritant upon the serous membrane. But in case of puncture

of the lung without external wound, the atmospheric gases are filtered of the causes of decomposition before they enter the pleura, by passing through the bronchial tubes, which, by their small size, their tortuous course, their mucous secretion, and ciliated epithelial lining, seem to be specially designed to arrest all solid particles in the air inhaled. Consequently the effused fluids retain their original characters unimpaired, and are speedily absorbed by the unirritated pleura.

Applying these principles to the treatment of compound fracture, bearing in mind that it is from the vitality of the atmospheric particles that all the mischief arises, it appears that all that is requisite is to dress the wound with some material capable of killing these septic germs, provided that any substance can be found reliable for this purpose, yet not too potent as a caustic.

In the course of the year 1864 I was much struck with an account of the remarkable effects produced by carbolic acid upon the sewage of the town of Carlisle, the admixture of a very small proportion not only preventing all odour from the lands irrigated with the refuse material, but, as it was stated, destroying the entozoa which usually infest cattle fed upon such pastures.

My attention having for several years been much directed to the subject of suppuration, more especially in its relation to decomposition, I saw that such a powerful antiseptic was peculiarly adapted for experiments with a view to elucidating that subject, and while I was engaged in the investigation the applicability of carbolic acid for the treatment of compound fracture naturally occurred to me.

My first attempt of this kind was made in the Glasgow Royal Infirmary in March, 1865, in a case of compound fracture of the leg. It proved unsuccessful, in consequence, as I now believe of improper management; but subsequent trials have more than realised my most sanguine anticipations.

Carbolic acid* proved in various ways well adapted for the purpose. It exercises a local sedative influence upon the sensory nerves; and hence is not only almost painless in its immediate action on a raw surface, but speedily renders a

* Carbolic acid is found in the shops in two forms—the glacial or crystalline, solid at ordinary temperatures of the atmosphere; and the fluid, which sometimes passes under the name of German creasote. The fluid variety is sold in various degrees of purity. The crude forms are objectionable from their offensive odour; but the properly rectified product is almost fragrant. Different samples, however, differ much in energy of action, and hence, though I have hitherto employed the liquid kind in compound fracture, it would probably be better to use the crystallised form, melting it by placing the vessel containing it in warm water for a few minutes. Carbolic acid is almost absolutely insoluble in water, but dissolves readily in various organic liquids, such as the common fixed oils or glycerine.

wound previously painful entirely free from uneasiness. When employed in compound fracture its caustic properties are mitigated so as to be unobjectionable by admixture with the blood, with which it forms a tenacious mass that hardens into a dense crust, which long retains its antiseptic virtue, and has also other advantages, as will appear from the following cases, which I will relate in the order of their occurrence, premising that, as the treatment has been gradually improved, the earlier ones are not to be taken as patterns.

Case 1.—James G., aged 11 years, was admitted into the Glasgow Royal Infirmary on August 12th, 1865, with compound fracture of the left leg, caused by the wheel of an empty cart passing over the limb a little below its middle. The wound, which was about an inch and a half long, and three-quarters of an inch broad, was close to, but not exactly over, the line of fracture of the tibia. A probe, however, could be passed beneath the integument over the seat of fracture and for some inches beyond it. Very little blood had been extravasated into the tissues.

My house-surgeon, Dr. Macfee, acting under my instructions, laid a piece of lint dipped in liquid carbolic acid upon the wound, and applied lateral pasteboard splints padded with cotton wool, the limb resting on its outer side, with the knee bent. It was left undisturbed for four days, when, the boy complaining of some uneasiness, I removed the inner splint and examined the wound. It showed no signs of suppuration, but the skin in its immediate vicinity had a slight blush of redness. I now dressed the sore with lint soaked with water having a small proportion of carbolic acid diffused through it; and this was continued for five days, during which the uneasiness and the redness of the skin disappeared, the sore meanwhile furnishing no pus, although some superficial sloughs caused by the acid were separating. But the epidermis being excoriated by this dressing, I substituted for it a solution of one part of carbolic acid in from ten to twenty parts of olive oil, which was used for four days, during which a small amount of imperfect pus was produced from the surface of the sore, but not a drop appeared from beneath the skin. It was now clear that there was no longer any danger of deep-seated suppuration, and simple water-dressing was employed. Cicatrisation proceeded just as in an ordinary granulating sore. At the expiration of six weeks I examined the condition of the bones, and, finding them firmly united, discarded the splints; and two days later the sore was entirely healed, so that the cure could not be said to have been at all retarded by the circumstance of the fracture being compound.

This, no doubt, was a favourable case, and might have done well under ordinary treatment. But the remarkable retardation

of suppuration, and the immediate conversion of the compound fracture into a simple fracture with a superficial sore, were most encouraging facts.

Case 2.—Patrick F., a healthy labourer, aged 32, had his right tibia broken on the afternoon of Sept. 11th, 1865, by a horse kicking him with its full force over the anterior edge of the bone about its middle. He was at once taken to the infirmary, where Mr. Miller, the house-surgeon in charge, found a wound measuring about an inch by a quarter of an inch, from which blood was welling profusely.

He put up the fracture in pasteboard splints, leaving the wound exposed between their anterior edges, and dressing it with a piece of lint dipped in carbolic acid, large enough to overlap the sound skin about a quarter of an inch in every direction. In the evening he changed the lint for another piece, also dipped in carbolic acid, and covered this with oiled paper.* I saw the patient the next day, and advised the daily application of a bit of lint soaked in carbolic acid over the oiled paper; and this was done for the next five days. On the second day there was an oozing of red fluid from beneath the dressing, but by the third day this had ceased entirely. On the fourth day, when, under ordinary circumstances, suppuration would have made its appearance, the skin had a nearly natural aspect, and there was no increase of swelling, while the uneasiness he had previously felt was almost entirely absent. His pulse was 64, and his appetite improving. On the seventh day, though his general condition was all that could be wished, he complained again of some uneasiness, and the skin about the still adherent crust of blood, carbolic acid and lint, was found to be vesicated, apparently in consequence of the irritation of the carbolic acid. From the seventh day the crust was left untouched till the eleventh day, when I removed it, disclosing a concave surface destitute of granulations, and free from suppuration. Water-dressing was now applied, and by the sixteenth day the entire sore, with the exception of one small spot where the bone was bare, presented a healthy granulating aspect, the formation of pus being limited to the surface of the granulations.

I now had occasion to leave Glasgow for some weeks, and did so feeling that the cure was assured. On my return, however, I was deeply mortified to learn that hospital gangrene attacked the sore soon after I went away, and made such havoc that amputation became necessary.

While I could not but feel that this case, by its unfortunate issue, might lose much of its value in the minds of others, yet to myself it was perfectly conclusive of the efficacy of carbolic

* A cheap substitute for oiled silk, devised by the late Dr. M'Ghee, of the Glasgow Infirmary, and very useful for covering poultices, &c.

acid for the object in view. At the same time it suggested some improvement in matters of detail. It showed that the acid may give rise to a serous exudation apt to irritate by its accumulation, and therefore that a warm and moist application would be advantageous to soothe the part, and also ensure the free exit of such exuded fluid. At the same time it appeared desirable to protect the crust with something that would retain the volatile organic acid more effectually than oiled silk or gutta percha, through which it makes a way with the utmost facility. For this purpose a metallic covering naturally suggested itself, and as ordinary tin-foil is unsuitable from its porosity, I employed thin sheet-lead, and afterwards block tin, such as is used for covering the jars of anatomical preparations, superior to lead on account of the facility with which it can be moulded to any shape that is desired.

At length a case presented itself well calculated to test the value of carbolic acid in compound fracture.

Case 3.—John H., aged 21, a moulder in an iron foundry, was admitted on May 19th, 1866, with compound fracture of the left leg, produced in the following manner. He was superintending the raising by crane of an iron box containing sand ready for a casting, the box and its contents weighing about 12 cwt., when one of the chains by which it was suspended slipped, and the box fell from the height of four feet with unbroken force upon the inner side of his leg, which was planted obliquely beneath it. Both bones were fractured, the tibia about its middle, and a wound an inch and a half in length, and three-quarters of an inch broad, was made at the inner aspect of the limb, on a level with the fracture of the tibia, and obviously communicating with it. At the same time the soft parts generally were much contused, as was evident from the great distension of the limb with extravasated blood. Dr. A. Cameron, my house-surgeon, finding, on manipulating the limb, that bubbles escaped along with the blood, implying that air had been introduced during the movements of the leg as the patient was being carried to the infirmary, thought it best that I should see the case, which I did at three p.m., three hours and a half after the accident. In order to expel the air I squeezed out as much as I could of the clotted and fluid blood which lay accumulated beneath the skin, and then applied a bit of lint dipped in carbolic acid slightly larger than the wound, and over this a piece of sheet tin about four inches square. Finally the limb was placed in pasteboard splints, resting on its outer side with the knee bent. At eight p.m. some more acid was added with another piece of lint, so that the crust of clots, carbolic acid and lint, was about one-third of an inch in thickness. A hot fomentation also was applied over the inner aspect of the leg,

the crust being protected by the tin. Next day he was pretty easy, and had passed a quiet night, though occasionally awakened by starting pains; the pulse was 90, but he took some food with relish. The surface of the crust was touched again with carbolic acid, and the fomentation was continued, and in place of the internal pasteboard splint, a large sheet of tin was applied over the flannel from the knee to the ankle, being retained in position by looped bandages. This proved a very satisfactory arrangement, the tin having sufficient firmness to answer the purpose of a splint, while it most effectually retained the moisture of the flannel, which, again, served as an excellent padding. The fomentation was changed night and morning, and gave great comfort to the patient, and once a day carbolic acid was applied lightly to the crust.

Two days after the accident the limb was easier, but the circumferential measurement of the calf continued the same, and the pulse was 96, though soft. On the fourth day—the critical period with reference to suppuration—the limb was free from pain, and the calf less tense, and distinctly reduced in dimensions; while the pulse had fallen to 80, and the patient had enjoyed his food after a good night's rest. After this the swelling steadily subsided, the skin remaining, as it had been from the first, free from the slightest inflammatory blush, and his general health was in all respects satisfactory. Seven days after the receipt of the injury there was some puriform discharge from the surface of the skin where the carbolic acid, confined by the smaller piece of tin that covered the crust, had produced excoriation by its caustic action; and to prevent needless irritation from this cause, the tin was reduced so as to leave only a narrow flat rim round a bulging part, which corresponded to the crust.

About a fortnight after the accident a sense of fluctuation was experienced over the seat of fracture, but, as all was going on favourably otherwise, I hoped that this was due simply to serum from the effused blood; and in a few days it had completely disappeared, not a drop of pus meanwhile having escaped from beneath the crust. About this time the edges of the crust became softened by the superficial discharge from the surrounding parts, and these softened portions were daily clipped away with scissors. Thus the circumferential part of the crust which had overlapped the skin was removed, and that which lay over the extravasated blood in the wound was also reduced to smaller and smaller size.

On the 7th of June, nearly three weeks after the accident, an observation of much interest was made. I was detaching a portion of the adherent crust from the surface of the vascular structure into which the extravasated blood beneath had been

converted by the process of organisation, when I exposed a little spherical cavity about as big as a pea, containing brown serum, forming a sort of pocket in the living tissues, which, when scraped with the edge of a knife, bled even at the very margin of the cavity. This appearance showed that the deeper portions of the crust itself had been converted into living tissue. For cavities formed during the process of aggregation, like those with clear liquid contents in a Gruyére cheese, occur in the grumous mass which results from the action of carbolic acid upon blood; and that which I had exposed had evidently been one of these, though its walls were now alive and vascular. Thus the blood which had been acted upon by carbolic acid, though greatly altered in physical characters, and doubtless chemically also, had not been rendered unsuitable for serving as pabulum for the growing elements of new tissue in its vicinity. The knowledge of this fact is of importance; as it shows that, should circumstances appear to demand it, we may introduce carbolic acid deeply among the blood extravasated in a limb, confident that all will nevertheless be removed by absorption. A few days later all traces of the little cavity had become obliterated by the granulating process.

At the close of the third week the application of carbolic acid to the crust was discontinued, and the original internal pasteboard splint padded with cotton was again employed, instead of the tin and fomentation. What remained of the crust was still kept protected with the tin cap, with the view of ascertaining how long it would continue to adhere; and at length, nearly four weeks after the accident, I tore it off from the vascular surface beneath, which bled as I did so. The crust had preserved the subjacent parts from disturbance as effectually as if it had been a piece of living integument; and it is worthy of remark that the vascular surface below had not the pulpy softness of granulations, but was comparatively firm and substantial. The bit of crust still smelt of carbolic acid, though none had been applied for five days.

At the expiration of six weeks from the receipt of the injury the fragments were found firmly united in good position, just as if the fracture had been a simple one, though the cicatrisation of the rather extensive sore was not complete till a later period.

Case 4.—James W., aged 10, was engaged in a turner's factory worked by steam power on the 8th of June, 1866, when his right arm was drawn in between a strap and a shaft turned by it. He called out for assistance, but thinks two minutes must have elapsed before the machinery was stopped, and during the whole of this time the strap, which was still moving while he held the arm steady, was cutting into the ulnar side of the forearm, breaking through the ulna about its middle, while the

radius was bent with "green-stick" fracture. He was taken at once to the infirmary, where the wound was found to be about an inch and a half in depth, occupying more than half the circumference of the limb, chiefly at the dorsal aspect, but extending round also to the palmar side. The upper fragment of the ulna was protruding about an inch, and two strips of muscle, about a quarter of an inch in thickness and from two to three inches in length, were hanging out; the lacerated state of the parts confirming the boy's account of the accident.

On seeing him about two hours afterwards, I sawed off the protruding portion of the ulna, and the tags of muscle having been previously clipped away, I applied carbolic acid freely to the whole interior of the wound, including the exposed surface of the bone; and having straightened the radius, which gave way during the process, placed the limb upon a wooden palmar splint. Avoiding any attempt to approximate the lips of the wound, I covered it with a piece of sheet-tin, sufficiently large to overlap the sound skin about a quarter of an inch in every direction. The limb was fixed to the splint by a bandage, so arranged as to permit the removal of the tin without disturbing the apparatus; and hot fomentations were applied over the whole. A few minutes after the carbolic acid was applied he said he was perfectly easy. At seven o'clock he asked for food, and took it. His pulse was then 84. At eight p.m. I saw him again, and applied beneath the tin a piece of lint dipped in carbolic acid, about as large as the wound. Noticing some distortion in the upper arm, I found that the humerus also was broken in its lower third, and applied splints accordingly, the limb being kept supported upon a pillow beside him. He slept a good deal during the night, though moaning and starting occasionally. Next day his pulse was 108; but he took his breakfast heartily, and the tongue was healthy, while he complained only of a little uneasiness about the elbow, and even this disappeared on changing the fomentation cloth. A piece of sheet-tin was now arranged so as to form a sort of cover for the forearm, including the hand. Being retained in position by looped bandages, it increased the steadiness of the limb, while it ensured efficiency of the fomentation.

Two days after the accident the oozing of blood and serum, which had been considerable during the previous twenty-four hours, had nearly ceased; but he still experienced comfort from the fomentation, though any pain which he felt was connected with the simple fracture of the humerus. His pulse was 88; his tongue clean and appetite good after a sound sleep at night; and from this time onward his general health continued perfectly satisfactory. On the fourth day a small quantity of pale, grey, slimy discharge was observed from beneath the crust at

one part; and thinking that this might, perhaps, have occurred for want of proper action of the carbolic acid, I applied the latter with unusual freedom to the surface of the crust. This was repeated at night; and the same energetic use of the carbolic acid, twice in the twenty-four hours, was continued on the fifth day. Yet, on the sixth day, the discharge from beneath the crust, instead of being diminished, was increased, and more puriform to the naked eye; while, under the microscope, there was clear indication of new cell-formation, whereas, on the day before, nothing but fibrinous material, with granular and other débris, had been discoverable. On the seventh day the discharge was still greater in amount; yet the limb remained free from pain, and was steadily diminishing in circumference, and pressure in the neighbourhood of the crust failed to induce any increase of the discharge, which appeared to be merely superficial.

In the course of the next few days it became apparent that this discharge, so far from being the result of insufficient action of the carbolic acid, was caused by the stimulating influence of the acid itself, applied with greater freedom over a crust much thinner than that of Case 3. Suppuration from this cause is, however, productive of no mischief, as will be better understood from the sequel. That such was the case in this instance was manifest on the fourteenth day, when the crust, which was nearly detached, was removed, disclosing an appearance for which I confess I had not been prepared. In place of the deep ragged wound was a granulating sore, nearly on a level with the skin, and pretty uniform in surface, except at one part about its middle, where there was a depression about half an inch in depth, at the bottom of which a small portion of the outer surface of the ulna was visible, bare, but of pink colour. Not only had the compound of blood and carbolic acid which had existed in the depths of the wound been organised, but the portions of tissue killed by the violence to which they had been subjected in the accident, and also those destroyed by the caustic action of the carbolic acid, had been similarly acted on, and all had been, so to speak, fused together into a living mass, without the occurrence of any deep-seated suppuration.

By the nineteenth day the exposed part of the bone was covered, and the depression in the sore obliterated by granulation, without any exfoliation occurring; and two days short of seven weeks after the accident the sore was entirely healed.

The extensive loss both of bone and of the soft parts made osseous union of the ulna a matter of difficulty, and on the 5th of August the limb was placed in a starched apparatus, to promote complete consolidation, and he was soon after discharged from the hospital.

About six weeks later he presented himself at the infirmary, and the bandage was removed in my absence, when, the bone appearing firm, he was allowed to dispense with the apparatus, and was unfortunately not directed to show himself again. In the course of a few weeks, however, he appeared with the fragments again movable. The starched bandage was therefore reapplied, but when I last saw him, some weeks ago, bony union had not yet occurred. A good deal of osseous formation had, however, taken place, so that the fragments now overlapped each other; and should the cure be still incomplete when he next shows himself the case will be a fair subject for Bickersteth's method of treating ununited fracture by drilling. Meanwhile, the radius being firm, and the injured extensors of the fingers having completely regained their powers, he will, in any event, have a very useful hand.

This case indicated a greater range of applicability of the treatment by carbolic acid than I had anticipated, and encouraged me to employ it under the almost desperate circumstances of the following case.

Case 5.—Charles F., a fine, intelligent boy, seven years of age, was knocked down at eight p.m. on June 23rd, 1866, by an omnibus crowded with passengers inside and out, and one if not both wheels passed over his right leg, breaking both the bones and inflicting a frightfully extensive wound. The person who brought him to the infirmary said that he had lost a great deal of blood, and the presence of a compress in the ham, placed there by the medical man who saw him at the time of the accident, corroborated this statement. When I saw the child, after an unavoidable delay of three hours, he was greatly prostrated by shock as well as hemorrhage, so much so that amputation appeared likely to afford but a slender chance of life, although the state of the injured parts seemed at first sight to admit of no alternative. The tibia, which was broken about its middle, lay exposed in a wound occupying almost the entire length and breadth of the inner aspect of the leg, reaching from the inner condyle of the femur to within an inch and a quarter of the tip of the internal malleolus; the skin having been stripped back so as to lay bare the gastrocnemius as well as the bone. The large flap of integument was perforated about two inches from its edge opposite to the seat of fracture, and there was also an opening in the skin on the outer side of the leg, implying that the violence had acted with full effect upon the whole thickness of the limb. Yet the bone was not comminuted, and the muscles, though evidently severely contused, were not much lacerated, while the anterior tibial artery was felt beating in the foot; and, hopeless as would have been the idea of trying to

save the limb by ordinary treatment, I determined to make the attempt by the help of carbolic acid.

Chloroform having been administered, the acid of full strength was applied with great freedom, the contused mass being repeatedly squeezed, to induce the liquid to insinuate itself into all its interstices, including that between the riding fragments of the tibia. The flap of skin was then brought towards its natural position, and lint soaked in the acid was placed upon the wide raw surface which still remained exposed, and over the lint a piece of sheet tin. The other openings in the integument were similarly treated; and, the riding of the fragments having been corrected by extension, the limb was laid on its outer side, with the knee bent, upon an external pasteboard splint, moulded to the leg and foot, and strengthened by a temporary wooden splint. A porous cloth was applied over the tin to absorb the blood and serum which must escape from beneath its edges; and the whole apparatus was secured with a roller. At the conclusion of the dressing the pulse was 112.

He passed a restless night, though occasionally dozing, and the pulse next morning was 120. The bandage having been cut away sufficiently to enable the tin to be removed, the wound was found to have gaped so that the lint no longer covered the whole of it. Pieces of the cloth, which had become soaked with the exuded blood, were placed upon the exposed part, and also over the lint so as to make the crust more substantial, and the whole was freely treated with carbolic acid. The tin was then bulged out so as to be accommodated to the thickened crust, while overlapping the neighbouring skin to a slight extent; being retained in position by a couple of turns of bandage. A hot fomentation was then placed upon the inner aspect of the limb, and the whole leg enveloped in a large sheet of block-tin secured by looped bandages.

In the evening the pulse was 136, and on the following morning, thirty-six hours after the accident, it had risen to 168, and was very weak. He lay talking to himself in a rambling manner, unable to understand what was said to him. He was extremely restless, and had taken no food whatever since his admission. During the next night, however, he became composed, and took a little milk; and on the morning of the third day he was found to be again intelligent, while the pulse had fallen to 140, and was of fair strength. The skin in the vicinity of the injury, both at the knee and ankle, was free from discoloration or swelling; but part of the large flap of skin over the calf was of purple tint, and had evidently lost its vitality. This dead part was touched with carbolic acid, to preserve it from decomposition, and convert it into a crust for the protection of the subjacent textures, and an additional piece of tin

was applied to cover it. A good deal of brown transparent fluid escaped from beneath the crust.

On the fourth day the pulse was 120; he was quite bright and tranquil, and said he felt no pain. There was still no odour about the injured part, except that of carbolic acid. The discharge was much diminished, and was principally serous.

By the sixth day the pulse was as low as 108. He had a hearty appetite, and also took with avidity the six ounces of port wine allowed him during the twenty-four hours. His tongue, which had previously been dry, was moist. He had slept well at night, though waking occasionally with a scream. The discharge from beneath the crust, trifling in amount, was chiefly serous.

On the eighth day the splint was removed for the first time, and was covered with sheet-tin in order to prevent the discharge from softening the pasteboard. The leg had become slightly bent inwards through the yielding of the splint; and when it was now straightened, the upper margin of the crust became detached, exposing a deep granulating cavity. A bit of lint, dipped in carbolic acid, was applied lightly over this opening, and the tin was readjusted so as to cover it. Pressure in the neighbourhood of the injured part, about the knee, ankle, and calf, failed to induce the slightest increase of the discharge, which was thus shown to come merely from the surface beneath the crust, and was still for the most part transparent.

At the close of the second week his state was on the whole very favourable. His general health was much improved; and although he still suffered occasionally, especially at night, from restless movements of the limb, these had been much restrained by a new splint, extending from half way up the thigh to the toes. The wound was certainly very large, measuring eight inches in length by six in greatest width; but it was healing round almost the entire circumference. In order to permit cicatrisation, which carbolic acid tends to check, the detached edges of the crust had been clipped away, and the exposed narrow ring of granulations was dressed with lint dipped in a solution of sulphite of potash—five grains to an ounce of water. The crust, however, was still touched daily as before with carbolic acid, while the tin still covered the whole of the injured part. By this means it was intended that cicatrisation should be allowed to go on, and yet decomposition of the discharge be prevented; and this seemed to be to a great extent, if not entirely, attained.

There was, however, one unfavourable circumstance. The little sore on the outer side of the leg, which had been dressed separately without carbolic acid, and had for some time been observed to be increasing rather than diminishing, now assumed

unmistakably the appearance of a mild form of hospital gangrene, and became blended with the main sore. For two days an attempt was made to correct the disease by touching the affected part with nitric acid; but on the eighteenth day it was clear that some more effectual measures must be adopted, as the skin in the vicinity had become insidiously undermined to a very serious extent. Accordingly I placed the boy under chloroform, and scraped away with a spoon all the soft grey sloughs, slitting up the skin in order to gain access to them, and in some parts clipping portions of it away, and then applied the strongest nitric acid thoroughly to the bleeding surface. As the disease extended up to the anterior edge of the crust, I thought it right to examine the state of the parts beneath, and as it was pretty loose I removed it. And now a sight presented itself which filled me with horror. There was, indeed, no appearance of hospital gangrene in the parts which the crust had covered, the granulations there having the florid aspect of perfect health; but in the large sore lay the lower fragment of the tibia, freely exposed to the extent of two inches and a half in length, bare and white like a macerated bone. At the upper end of this fragment, and apparently for a considerable distance from it, the bone was thus denuded round its entire circumference; and judging from previous experience, there was reason expect that, even if the patient should survive the profuse suppuration which was to be anticipated, about two inches of the whole thickness of the tibia must exfoliate, an amount of loss which, in the child's small limb, would of necessity render it utterly useless. The upper fragment was also bare for about half an inch just above its extremity, but the end itself was covered with prominent granulations.

Though despairing of any good result, I resolved to watch for a while the progress of events, prepared to amputate as soon as the boy's health should show signs of failing; and comforting myself with the reflection that he had been brought into a state greatly more favourable for the operation than on his admission. In order to keep down the amount of the discharge the sore was dressed with the sulphite of potash lotion, a poultice being applied to the part which had been treated with nitric acid. When the sloughs caused by the caustic separated a healthy surface appeared, which in the course of the next ten days was nearly healed. In other parts of the sore, however, grey patches occasionally showed themselves, assuming healthy characters after being touched with carbolic acid, which, when efficient, has the advantage over other caustics of being painless. But at length spots of hospital gangrene appeared in a form no longer amenable to this mild treatment, in spite of which they began to extend rapidly, and on the 26th of July it became necessary to

put the child again under chloroform and apply nitric acid in the same thorough manner as before. This had the effect of producing a perfectly healthy state of the whole sore, which proceeded to heal with great rapidity; so that by the 8th of August it was found to measure an inch less in length and two inches less in greatest breadth that at the time when the crust was removed.

In the meantime his general health instead of deteriorating, had improved, and he was evidently regaining flesh, while the discharge of pus was astonishingly little considering the state of the limb, being barely sufficient to soak the single layer of lint that covered the sore.

The explanation of this satisfactory state of things was afforded by an observation of much interest made at this period. Since the removal of the crust the granulations had been growing up on all sides about the bone, so that the bare part of the upper fragment was almost entirely covered in, and even the lower fragment, which projected beyond the level of the upper, was to a great extent embedded in the new growth. It had been noticed before the end of this fragment was so much covered up, that granulations were sprouting from the medullary canal, showing that the bone was not dead in its entire thickness. Nevertheless, as the superficial parts had certainly lost their vitality, I had not doubted that a thin layer at least must exfoliate from the whole. Now, however, I observed that some of the surface which remained exposed had assumed a pink colour, implying that the layer of dead bone, whatever its thickness might have originally been, had become so thin as to be transparent, through absorption by new tissue growing in the interior. Further, on attempting to pass the eyed end of a probe between the tibia and the granulations which had enveloped it, I found to my surprise that the instrument could only be introduced, for a very short distance, the granulations, with the exception of a narrow free border, being everywhere adherent. The new tissue outside the bone had coalesced with that within, after complete absorption of the intervening dead stratum. Hence the remarkable absence of discharge from around the bone.

During the following month I was absent from home, but was informed that the same process was for some time continued: the granulations gradually encroaching more and more on the exposed bone, and adhering to it as they advanced. The upper fragment was thus entirely covered without any exfoliation occurring, and the bare surface of the lower fragment was reduced to comparatively small dimensions. On the 10th of September the remainder of the dead part, being loose, was removed without difficulty as an exfoliation. It was about an

inch in greatest length; but was of extremely irregular shape, full a quarter of the circumference of the tibia being deficient. At the upper end, where it had been most prominent and had become discoloured, it had nearly the full thickness of the dense tissue; but towards the lower end it became thinned away, so as to be in some places as delicate as tissue-paper. The outer surface presented near the margin an appearance of especial interest, being at some parts, even where the bone had considerable thickness, variously scooped and bevelled in a manner that admitted of no other explanation than that the granulations overlapping the dead bone externally had been engaged in its absorption. On applying a magnifier to these excavations in the external surface, they were seen to present a peculiar velvety aspect, differing from the rest of the exterior, but resembling the internal parts of the exfoliation.

The only observation at all analogous to this with which I am acquainted is that of the effects produced upon the ivory pegs used in Dieffenbach's method of treating ununited fracture, the parts of the pegs driven into the bone having been observed, when removed, to have suffered diminution in size. This has hitherto remained as an isolated fact, and it has been regarded as an axiom in surgery that a piece of bone once dead must all come away as an exfoliation. Why it was that in the case before us, the osseous tissue destroyed by external violence, aided by the action of carbolic acid, was so exceptionally affected by surrounding parts, the granulations in its vicinity discharging the office of absorbents of the dense tissue, instead of forming pus like those around an ordinary exfoliation, I will reserve for future discussion, when I shall have occasion to point out the great importance of the fact in its bearing both on pathology and practice. Meanwhile I may remark that it illustrates beautifully the function of absorption, which, even where solid substances are taken up, does not require any special set of absorbent vessels, but may be effected even by granulations, the most rudimentary of all tissues, each cell feeding upon any suitable substance in its vicinity.

We also see at once the value of the observation with reference to the treatment of compound fracture with carbolic acid; for it shows that in cases in which the bone is exposed, the acid may be applied so freely as to cause death of its tissue without necessarily inducing exfoliation.

The case was now reduced to one of simple fracture with a large granulating sore, and this was greatly diminished and healing rapidly, while the union of the fragments was becoming very firm; and the limb would doubtless soon have been entirely sound had it not been for that cruel scourge, hospital gangrene.

This, however, had shown itself ten days before the removal of the exfoliation, not in the sore, but about an inch from its edge, as a pustule in the cicatrix, which on bursting disclosed a grey slough, that soon showed its characters unmistakably, producing considerable destruction of the scar, although the original sore continued to heal kindly.

I will not enter into the history of this and numerous subsequent attacks of the disease, further than to state than they were partial in their effect, the unaffected parts still healing with rapidity, and that they continued to yield to the treatment with nitric acid; so that at one time the whole sore was very nearly healed.

But in the early part of October the disease assumed a more intractable form, and in spite of the most energetic use of nitric acid on several occasions, which produced illusory appearances of temporary improvement, by the 27th of the month the sore had become enlarged to nearly its original dimensions, while the limb had swollen greatly through inflammation caused by the irritation, and the boy's general health was rapidly giving way under the increased discharge and nervous excitement.

The question of amputation now again presented itself, but a good airy room in a different department of the hospital being happily now at my disposal, I determined to give the limb one last chance. Before he was taken to the new ward, nitric acid was once more thoroughly applied. His nurse was directed to change the poultice every three hours, and he continued to take wine and some tonic medicine. His general health immediately improved, and when the slough separated, the sore looked healthy. It was now dressed with lint dipped in a solution of sulphate of copper, five grains to an ounce of water, and over this a poultice, the whole being changed every three or four hours night and day; and under this treatment cicatrisation proceeded rapidly. Yet when the scar had attained a certain width, a tendency to vesication again showed itself, threatening recurrence of the disease, and in order to prevent the newly-formed epidermis from acquiring poisonous qualities as it seemed to do, I ordered the lint with the lotion, as well as the poultice, to be extended over the whole cicatrix. From the time this dressing was adopted the progress was uninterruptedly satisfactory till the 9th of January, when the sore was at length entirely healed, and he was allowed for the first time to put his foot to the ground. The contraction of the large cicatrix, involving at one part the gastrocnemius muscle, had caused some bending of the knee and pointing of the toes. The former has since become corrected spontaneously by his habitual attitude, sitting in bed with the legs extended before him. The pointing of the toes has also become diminished, and will probably soon pass

off entirely, without the division of the tendo Achillis, which I had in view. The tibia, which has long been firm, is of precisely the same length as the other, and the contour of the limb is natural. His general health also is excellent; but he was detained in the hospital till the 9th inst. (March, 1867), on account of an obstinate eczematous eruption on the integument of the leg irritated by the long-continued poulticing.

Case 6.—The following case terminated fatally, but from circumstances of an accidental nature; and I trust that the instruction to be derived from it will not be interfered with by the unhappy ultimate result.

John C., aged 57, a labourer, was working in a quarry at Row, near Helensburgh, on the Clyde, at nine a.m. on Oct. 26th, 1866, when, striking with a crowbar an overhanging part, he brought down an enormous mass of stone weighing six or seven tons, which fell in large blocks on and about him. His right thigh-bone was broken in its lower third, and, as afterwards appeared, the end of the upper fragment was driven through the skin at the inner aspect of the limb a little above the knee. The right collar-bone was fractured at the same time, and he was severely contused in other parts. It was long before his only companion in the quarry could extricate him from his position, and the procuring of a conveyance involved further delay; so that a considerable period elapsed, during which he lost much blood from the thigh, before he could be taken to Helensburgh. Here he was placed on a litter, with a warm moist blanket round the limb, with the object, as he said, of checking the bleeding, which, however, it could not but tend to encourage. He was then conveyed by train to Glasgow, where he reached the infirmary six hours after the occurrence of the accident.

Dr. Archibald Cameron, the house-surgeon, seeing the case to be a very grave one, at once sent for me, but without any delay introduced carbolic acid into the wound by means of a piece of lint held in a pair of dressing forceps, passing it about an inch in every direction beneath the integument, after squeezing out a considerable quantity of extravasated blood from the orifice, which was large enough to admit the tip of the finger.

On arriving, an hour after the patient's admission, I found him in a state of prostration sufficiently explained by the severity of his injuries and by the blood lost to the circulation, including a large amount extravasated in the limb, and distending not only the whole thigh, but the calf, the tenseness of which contrasted strikingly with the flaccidity of the other.

Under these circumstances decomposition of the blood effused among the tissues would have been necessarily fatal. And yet, considering the length of time that had elapsed since the receipt

of the injury, and the fact that a reeking flannel had been for two hours in contact with the wound, and had already a somewhat offensive odour when removed from it, there seemed but a poor chance for the treatment with carbolic acid. On the other hand, taking into account the man's time of life and general condition, I believed that to amputate through the thigh infiltrated with blood would be certainly to kill him. And therefore, as it was impossible to say that the other treatment had no chance, while, if it should prove successful, it would have the immeasurable superiority of saving limb as well as life, I determined to persevere with it.

Having removed from the wound the dressings placed on it by Dr. Cameron, I forcibly squeezed out a further large amount of blood, and applied carbolic acid in lint and also mixed with blood, so as to provide for a crust of considerable thickness overlapping the skin by about half an inch every way. This was covered with a circular piece of tin, two inches across, well bulged out except a flat margin about a quarter of an inch wide, which rested on the surrounding integument. This tin cap was retained in position by a single turn of bandage tied round the limb.

The lower end of the upper fragment was much displaced downwards in the vicinity of the wound, but returned towards its natural position on extension of the limb. There still remained considerable depression anteriorly over the seat of fracture; but the lower fragment did not seem to project towards the ham so much as to forbid the use of the long splint. This I accordingly employed with two interior splints to support the muscles of the thigh, one of Gooch's material on the outer aspect, the other a large sheet of stout block tin, embracing the anterior, inner, and posterior aspects of the limb to a little below the knee, padded in the first instance with a dry towel, for which a hot fomentation should be substituted when all tendency to hemorrhage should have ceased. The object of having the tin extend round the back of the thigh was that it might prevent the discharges from soaking into the bed beneath; and in this way it proved extremely useful.

He passed an uneasy though not entirely sleepless night, suffering more from his shoulder and bruised side than from the thigh. Next morning his aspect was favourable, the pulse 76, and tongue natural; he took a little tea for his breakfast, but nothing solid. The tin cap having been removed, care being taken to avoid detaching the crust along with it, carbolic acid was applied to the surface of the latter. A hot fomentation cloth was then placed on the inner side and front of the thigh, and gave him great comfort, and when the dressing was completed he was quite easy. The interior splints being kept in

position by looped bandages, and the long splint by the usual folded sheet fixed by pins, along with the perineal band and handkerchief round the foot, the fomentations could be changed night and morning without any disturbance of the limb.

The following night he had a good deal of sleep, the thigh not causing him any inconvenience; and next day, the third after the accident, he took solid food with relish. His pulse was 72, and his tongue continued moist, though he was somewhat thirsty. The crust was touched again with carbolic acid, and covered with a circular piece of calico to prevent the tin cap from adhering to it. He still found comfort in the fomentations.

On the fourth day he made a substantial breakfast after a good night's rest, and was not so thirsty. There was, however, now seen for the first time a slight blush of redness on the front of the thigh over the seat of injury. This was on the fifth day somewhat increased, and the thigh and calf were both more swollen. The tongue also was slightly furred at the base, and his appetite was not quite so good.

On the sixth day the dimensions and appearance of the limb were unaltered, but on the seventh both the redness and swelling were distinctly diminished.

By the end of the second week his appetite was improved and his pulse was 76; while there had not been a drop of discharge from beneath the crust, which had been still touched daily with carbolic acid, the fomentations also having been continued. The swelling, however, had not subsided, and the redness, though varying in extent and degree, had never disappeared from over the seat of fracture. On the fifteenth day a defined prominence made its appearance at this part in a space about as large as the palm of the hand, a little further forward than the crust, and a sense of fluctuation was to be perceived in it. In the evening Dr. Cameron, on changing the fomentation, saw more pus than he thought could be accounted for by the superficial excoriation round the crust, and next morning, on removing the flannel, I found it soaked with similar discharge; a considerable quantity also lying between the tin splint and the limb. On raising the tin cap, the matter was seen welling out from beneath the lower edge of the crust. It was perfectly free from odour, confirming the conclusion I had previously arrived at that this abscess was not in any way caused by decomposition from atmospheric influence. The long period that elapsed before it made its appearance, together with the absence of any serious constitutional disturbance, clearly showed that the carbolic acid had effectually answered the purpose for which it was applied, the constant oozing of blood from the small wound having doubtless been in the patient's favour, by preventing decomposition from penetrating far into the interior

before he came under treatment. We know that a mass of extravasated blood occasionally becomes the seat of suppuration without the existence of any external wound. A curious instance of this occurred lately in my practice, in a boy who fell down the hold of a ship upon his head, and, besides serious cerebral symptoms, exhibited at once a remarkable prominence of the right eyeball, evidently due to extravasation of blood into the orbit. There being no wound, I expected that the blood would be absorbed ; but after the lapse of several days, the prominence of the eye showed increase rather than diminution, and the boy began to complain of supraorbital pain. Fluctuation then became perceptible, and pus was evacuated by incision, after which the eyeball gradually resumed its natural position.

Such I supposed to be the nature of the abscess in C.'s case, and previous experience made me fear that, if decomposition of its contents should occur, the irritation of the fetid pus might cause very serious consequences from rapid extension of suppuration among the imperfect and feeble products of the organization of the blood in the yet swollen limb.

Hence I had intented to evacuate the matter by aid of carbolic acid in such a way as to prevent decomposition. As the abscess was not near the surface at the part where it appeared to be pointing, I reckoned on having plenty of time for my operations, and was greatly disappointed to find that it had discharged itself spontaneously.

Nevertheless, as the pus was proceeding from beneath the crust impregnated with carbolic acid, and was still quite odourless, I did not altogether despair of attaining my object. In order to make the crust more effectual, I extended it for about three quarters of an inch at the part from which the pus was escaping, by a piece of lint dipped in carbolic acid, which, when mixed with pus, forms a sort of curdy mass which answered pretty well for a crust. A considerable quantity of matter, of moderate consistence and greenish white colour, was then pressed out from the limb. A new tin cap having been made, large enough to cover the whole of the extended crust, the fomentation was continued as usual.

Next day it was evident, from the sense of fluctuation, that reaccumulation had occurred in the abscess, but no further discharge had taken place. On removing the tin cap, however, pus was seen to well out from a new situation at the upper edge of the crust. A piece of lint dipped in carbolic acid was at once placed on this part, and the matter was pressed out and carefully collected, measuring 3oz., of moderate consistence and yellowish white colour, still without odour except that of carbolic acid. The crust having been somewhat extended at the situa-

tion of the new opening, the whole was freely treated with carbolic acid, the tin cap readjusted, and fomentation continued.

During the rest of the week that followed the first evacuation of the abscess the same treatment was pursued with the most satisfactory results. Some pus was usually seen on the fomenting flannel both morning and evening, and some was pressed out of the limb from the orifice last formed, but the amount rapidly diminished in quantity, and also became thinner and more transparent, while it continued free from odour. It may be worth while to mention in detail the quantities obtained from the limb in the morning of each of these days. On the seventeenth day it was an ounce and a half, somewhat thinner than before; on the eighteenth, two drachms and a half, decidedly thinner; on the nineteenth, half a drachm, much thinner and more transparent; on the twentieth, a quarter of a drachm, similar in quality, and on the twenty-first, six drops only, and almost free from opacity. Finally, in the evening of that day no discharge was seen on the flannel, nor could any be squeezed out from the limb. Meanwhile, the calf, which had increased markedly in circumference just before the abscess opened, steadily diminished, and in the thigh all swelling disappeared from over the seat of fracture, so that the end of the upper fragment, previously quite obscured, could be distinctly defined. His general health, too, had improved; his tongue had become quite clean, and he had acquired for the first time since his admission a genuine appetite, the pulse continuing about 72.

I suspect however, that this success made us relax a little our vigilant care in guarding against decomposition. But be this as it may, the method which we pursued in order to avoid it was not, as experience has since shown, thoroughly trustworthy. Would that I had at that time known of the mode of proceeding which will be found described in a future section of this communication. Very different then might have been the issue of the case!

On the twenty-second day pus was again found in the flannel, and some bubbles of gas were observed to escape along with the two or three drops that could be squeezed from the limb, and these had a distinctly offensive odour. Judging it now useless to retain the crust any longer I removed it, and found the original wound still sealed by the original clot, the openings by which the pus had escaped being new apertures in the skin overlapped by the crust. In the after part of the day he had a good deal of uneasiness, and in the evening half an ounce of pus, with numerous air-bubbles, was pressed out of the limb by Dr. Cameron. After this the patient passed a comfortable night, and in the morning only two drachms of matter could

be procured from the thigh, but this was thicker and more opaque than it had been, with decidedly offensive odour, and contained bubbles of gas; there was also pus in the flannel. There was, further, some return of swelling over the seat of fracture.

But though the plan of dealing with the abscess had failed to accomplish all that I desired, its essential object appeared to have been attained. For during the week in which decomposition was prevented, the thigh had become so much consolidated and strengthened that all danger of serious consequences seemed to have been tided over. No extension of the suppuration took place beyond the trifling degree above described, and his constitution did not suffer. Any further use of carbolic acid being obviously uncalled for, the sore was simply dressed with a lotion, the lint being so arranged as to allow free escape for the pus, and afterwards, to promote this more effectually, a small perforated caoutchouc tube was introduced, a dry cloth being substituted for the fomentation. Under this management the discharge gradually diminished in quantity, and became again thinner and more transparent, and the swelling of the calf became steadily reduced.

Still the opening did not close, and on the 2nd of December, more than a fortnight having passed in this way, I introduced a probe, and found that it passed downwards to bare bone, including a considerable extent of surface in the lower fragment. Here, then, was presented the prospect of a tedious process of exfoliation; whereas if decomposition of the pus had not occurred the granulations would probably have closed upon the dead bone, and absorbed it, as in the last case, and the fact that any part had lost its vitality would then never have been known. That there is a reasonable ground for this belief will, I trust, appear from the discussion in the succeeding section.

For a long time the progress of the patient continued satisfactory, the process of union of the fragments advancing steadily, till in the early part of February, the bone being firm, the splints were entirely discarded, and the case was reduced from one of fracture to one of limited exfoliation. It was satisfactory also to find that the knee-joint continued movable, so that I confidently anticipated recovery, with a perfectly useful limb.

At this period, however, a new symptom presented itself—viz., hemorrhage from the sinus. Mr. Hector Cameron, my present house-surgeon, who saw the first appearance of bleeding, supposed it to proceed from the surface of the granulations; for it was then small in amount and ceased spontaneously. Some days later, however—viz., on the 11th of February,—a very profuse hemorrhage occurred, the blood soaking through the bed,

and dropping upon the floor beneath, before it was observed, and the gentleman who was summoned to see the patient in Mr. Cameron's absence, found him pulseless. He afterwards rallied to some extent, but remained utterly prostrated, and unable to retain the slightest nourishment. As the popliteal artery could be felt beating in the lower part of the ham, I hoped that the source of the blood might be some minor branch, which might possibly close. But it afterwards appeared that a circular opening existed in the main vessel, occasioned no doubt by the pressure of an irregular projection of the lower fragment. It would be irrelevant to relate particularly the history of his yet further exhaustion by recurrent hemorrhages after delusive temporary cessations, or of my attempts to restore him by tying the popliteal artery, and making arrangements for transfusion, to which he declined to submit. He died on the 25th of February.—*Lancet, March* 16, 23, *and* 30, 1867, *pp.* 326, 357, 387.

40.—ON AMPUTATION AT THE SHOULDER-JOINT.

By James Spence, Esq., Surgeon to the Queen in Scotland, Professor of Surgery in the University of Edinburgh.

[It would be difficult to affirm that any operation at the shoulder-joint is absolutely new, that is, has never under any circumstances been performed before.]

The method of amputating at the shoulder-joint, however, which I am about to bring under the notice of the profession is not one of those included amongst what are termed the methods of election or choice. These, although varied as to the modes of their performance, may, as regards their results, be reckoned as four in number—namely, 1st the circular; 2nd, the oval; 3rd, the large deltoid flap; 4th, the double flap method. Of these, the first two are now so rarely practised that I need not further allude to them. The last two are those usually adopted, and they may be briefly described as follows.

The former of the two, the large deltoid flap method consists in cutting, either by transfixion or from without inwards, a large flap including nearly the whole of the deltoid muscle, raising it towards its scapular attachments so as to expose the joint and permit of disarticulation, and the formation of a short flap from the floor of the axilla to meet and unite with the large flap.

The double flap method consists in forming, either by transfixion or dissection, two nearly equal and slightly rounded flaps, their line of union after the completion of the operation being represented by a line drawn from the point of the acromion to

the base of the axilla. This plan of operating is that generally adopted; for although the deltoid flap makes an excellent covering, and admits of great facility in disarticulation, yet the amount of exposed cut surface and the double line of cicatrix contrast unfavourably with the single central linear scar left by the double flap method. Moreover, the great length of tissue required in the deltoid flap cannot often be obtained in cases requiring amputation at the shoulder.

As regards the method by double flap, if we look at such an amputation when recently performed, especially if executed by cutting the textures from without inwards, nothing can look better than the result; the two flaps joining neatly in their central line, and sufficiently full to give roundness and to fill up the space under the acromion. But if we look at such a stump some time after the healing process has been effected, the form of the stump will be found much altered, not merely from atrophy of texture common to all stumps, but from retraction of the muscular constituents of the flaps. The fibres of the pectoralis major retracting towards the sternum, and those of the latissimus dorsi and teres major towards the scapula and spine, cause a tendency to separation, especially at the lower part of the line of union, and give rise to the formation of a deep ugly hollow under the acromion.

In 1856, from a perusal of Professor Langenbeck's and M. Baudens' memoirs on excision of the shoulder for gunshot wounds, I was induced to adopt the method of excision by a single linear incision made down upon the head and neck of the humerus, beginning immediately external to the coracoid process, instead of the V-shaped incision then practised here. In performing the operation on the living subject, I was struck, not only by the ease with which disarticulation could thus be accomplished, but also by observing that, from the deltoid being divided so far forward, there was no trouble with bleeding from the trunk of the posterior circumflex artery, which in other methods is always divided and often proves troublesome. Ever since then I have performed excision by that method. In demonstrating the operation to my surgical class, I pointed out that it possessed another advantage—namely, that if, in proceeding to excise the head of the humerus, the injury or disease were found to be more extensive than anticipated, we could form—by simply carrying the incision back towards the posterior fold of the axilla, as I then expressed myself—a very tolerable stump. But when, after performing the excision, I completed the demonstration by converting the excision into an amputation, it struck me that the result would be even better than that of the ordinary method. Accordingly I determined to use it on the first suitable case which I met with.

Some short time afterwards two cases of injury were sent to my care requiring amputation at the shoulder: one the result of a railway accident, shattering and tearing the upper arm; the other, a gunshot wound shattering the tuberosities and shaft. In these two cases I carried out the plan, and the result was so perfect in both that I have always since resorted to it in every instance where the nature of the case admitted of its performance. Indeed, the only instances in which I could not perform it have been two: the one a case of secondary amputation for a burn, in which, from the state of the textures, I was compelled to form the flap entirely from the front; and the other a case requiring amputation from the presence of a malignant tumour, to which the skin was adherent, and where only two very small flaps could be obtained from the sound texture.

What I have already said might almost indicate the method proposed. But to describe it more distinctly and fully. Supposing the right arm to be the subject of amputation. The arm being slightly abducted, and the head of the humerus rotated outwards, if possible, with a broad strong bistoury I begin by cutting down upon the inner aspect of the head of the humerus, immediately external to the caracoid process, and carry the incision down through the clavicular fibres of the deltoid and pectoralis major muscles till I reach the humeral attachment of the latter muscle, which I divide. I then with a gentle curve carry my incision across and fairly through the lower fibres of the deltoid towards the posterior border of the axilla, unless the textures be much torn. I next mark out the line of the lower part of the inner section by carrying an incision, through the *skin and fat only*, from the point where my straight incision terminated, across the inside of the arm to meet the incision at the outer part. This ensures accuracy in the line of union, but is not essential. If the fibres of the deltoid have been thoroughly divided in the line of incision, the flap so marked out can be easily separated (by the point of the finger without further use of the knife) from the bone and joint, along with the posterior circumflex trunk, which enters its deep surface, and drawn upwards and backwards so as to expose the head and tuberosities. The tendinous insertions of the capsular muscles, the long head of the biceps, and the capsule are next divided by cutting directly on the tuberosities and head of the bone; and the broad subscapular tendon especially, being very fully exposed by the incision, can be much more easily and completely divided than in the double flap method. By keeping the large posterior flap out of the way by a broad copper spatula or the fingers of an assistant, and taking care to keep the edge of the knife close to the bone, as in excision, the trunk of the posterior circumflex is

protected. The only vessel which bleeds is the anterior circumflex divided in the first incision, and here, if necessary, a pair of catch forceps can be placed on it at once. In regard to the axillary vessels, they can either be compressed by an assistant before completing the division of the soft part on the axillary aspect, or, as I often do in cases where it is wished to avoid all risk, by a few touches of the bistoury the vessel can be exposed and can then be tied and divided between two ligatures, so as to allow it to retract before dividing the other textures.

In this, as in all amputations, I make a point of gently drawing out the large nerves and cutting them so short that they cannot become implicated in the cicatrix, but may be so deeply covered as to save them from liability to irritation from external influences. In cases where the limb is very muscular I dissect the skin and fat from the deltoid at the lower part, and then divide the muscular fibres higher up by a second incision, so as to avoid redundancy of muscular tissue. After arresting bleeding I bring the edges together with a few points of suture, leaving an opening at the lower and back part, through which the ligatures are brought out and the free escape of blood and other discharge permitted.

The dressing I use is very simple, being merely a flat pad of lint secured by a six-tailed split cloth, the tails being tied on the opposite side of the body.

The advantages I claim for this plan are—1st. The fulness and better form of the stump left after the healing, as shown in the results. 2nd. In this the posterior circumflex artery is not divided except in its small terminal branches in front, whereas, both in the large deltoid flap and the double flap methods, the trunk of the vessel is divided in the early steps of the operation, and, retracting, often gives rise to embarrassing hemorrhage. Besides, in the case of the single flap method, the vitality of the flap must be seriously compromised, as it depends chiefly on that vessel for its arterial supply, 3rd. The great ease with which disarticulation can be accomplished.—*Lancet*, *Feb.* 2, 1867, *p.* 142.

41.—ON EXCISION OF THE KNEE-JOINT, AND THE EMPLOYMENT OF A NEW APPARATUS IN THE AFTER TREATMENT.

By Dr. Patrick Heron Watson, F.R.S.E., Surgeon to the Royal Infirmary, and to Chalmers' Hospital for Sick and Hurt.

[In the following paper it is only the after-treatment of excision of the knee-joint which is considered. The question of the mode of operating, and of the selection of cases is not otherwise than incidentally referred to.]

It was in such circumstances that, about two years ago, I devised the following apparatus, which I have employed in every instance since that time in which I have performed the operation of excision of the knee. Since my introduction of it to the attention of my colleagues in the Infirmary, it has, I am glad to say, met with their sanction and practical approval, having been most successfully employed by Professor Spence and Dr. Gillespie in several cases. I have also understood, from the communications of friends and former pupils, that it has received even already a wide reputation, not only at home, but even abroad, commending itself to the attention of practical surgeons chiefly on account of its simplicity, comfort, and ease of application. It consists essentially of two parts—1. A suspension-rod made of iron, about the size of No. V. of trade wire gauge; 2. A modelled Gooch splint, long enough to extend from the tuberosity of the ischium to beyond the heel.

The suspension-rod extends from the groin to the extremities of the toes, and is bent to the outline of the limb, departing from it only in the situation of the excision, where it forms a bow or arch. To the upper surface of the rod are attached one or more hooks by which the suspension is effected.

Fig. 1.

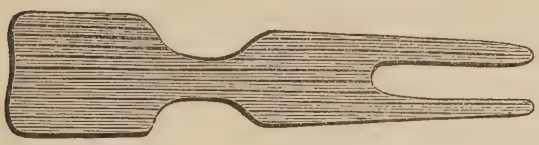
Suspension-rod for front of limb—the arch corresponds to the site of excision, the suspension-hook to the ankle-joint, upper end should terminate at the fold of the groin.

The Gooch splint should not be made too wide, and should certainly not surround the thigh and leg to more than two-thirds of their circumference. It should be scooped away laterally, at a part corresponding to the site of the excision, and should have an aperture cut corresponding to the tendo Achillis and heel. The inferior extremity of the splint is thus of a horse-shoe or stirrup shape, and admits of the ankle and foot being supported by the lateral horns of the splint, as they fold on each side of the malleoli, without the risk of inordinate pressure being made upon the tuberosity of the os calcis.

In application, the limb is first laid and carefully adjusted upon the posterior splint, which should preliminarily be padded with lint, and covered with gutta-percha tissue, or hot paraffine, in the situation which corresponds to the site of operation.

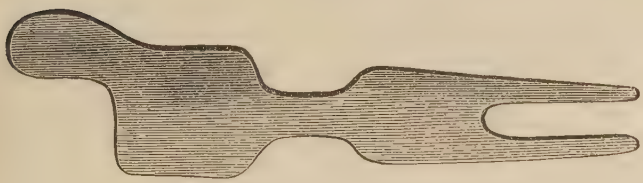
The iron rod is then placed in front, and folded lint laid between it and the limb at the groin (where the rod terminates above), at the upper part of the tibia, and at the bend of the ankle. These two parts of the apparatus are then retained in contact with the limb by means of an *open wove* roller bandage applied from the toes upwards, the site of the incision alone being left uncovered. The whole is then rendered immovable by means

FIG. 2.



Posterior "Gooch" splint of ordinary form—hollowed out in each side on the level of the operation wound, and cut out at the lower part in a horse-shoe or stirrup form, so as to relieve the heel and tendo Achillis from any pressure.

FIG. 3.



Alternative form of "Gooch" splint for excision, hollowed out as in Fig 2.; the rounded part above, adapted to the os innominatum, and secured by means of strips of adhesive plaster.

either of plaster-of-Paris applied by the hand, of a consistence like thick cream, or of paraffine, which, having been rendered temporarily liquid by being heated, is applied by a large painter's brush. When the application has solidified, the patient may then be removed to bed, and the limb suspended from the running pulley of a Salter's swinging cradle, or from the roof-bar of the common iron-wire cradle employed to support the weight of the bed-clothes. I do not regard it as a matter of indifference whether plaster-of-Paris or paraffine is used. Each has its advantages. The plaster-of-Paris is firmer and not liable to be affected by heat like paraffine, but it has the disadvantage of permitting soakage of discharge; it takes longer to

consolidate, and when consolidated, is less easily clipped through by means of bandage-shears than the paraffine apparatus. I have of late, in the treatment of excisions and of compound fractures, employed the plaster-of-Paris as the substantial substratum, and thereafter applied the paraffine over it as soon as consolidation and drying has become complete, so as to secure its greater toughness, and its complete impermeability to fluids of any kind, whether blood, serum, or pus, from the line of incision, or water from the wet dressings which may be applied during the healing of the wound. The foot and limb should not be much raised above the level of the mattress upon which the patient lies, as this is apt to lead to an awkward position of the limb when the patient first begins to move about. When in bed, the sacrum and hips must be protected from all risk of inordinate pressure, by means of a large square corrugated air-cushion completely covered with a blanket and draw-sheet. This will be found to be most evenly and comfortably supported upon a firm hair-mattress, laid either on a thick hair-paillasse, or better, a spring-bed. The patient should be encouraged to sit up as much in bed as possible, even within a day or two of the operation, and as soon as it is possible should be removed out of bed during the day, either to another bed or couch, or should such not be attainable, to a mattress laid upon the floor. In sitting up, the air-pillow placed beneath upon the seat will be found a great comfort, as it admits of easy relief to the irksomeness of maintaining nearly the same sitting posture for a period of several hours.

The chief merits which I have observed in this method of after-treatment are:—1. The comparative comfort the patient experiences from the ease with which he can shift his lying posture or assume the sitting position without disturbing the adjustment; 2. The facility with which dressings are applied without detaching or removing any portion of the apparatus; 3. The permanence of the apparatus, never requiring, when properly applied in the first instance, to be renewed during the whole period of after-treatment; 4. The ease with which the apparatus can be obtained, its simplicity and cheapness.

An iron rod, easily procured from any smith, a long Gooch splint, fashioned for the purpose by the carpenter, or made of two common Gooch splints, of a size suited for the thigh or leg, stitched together, and then cut to suit the limb in length and contour, two *open wove* bandages, a pound of gypsum, and a couple of ounces of paraffine, are all the requirements. A few points, even in regard to such simple matters, may as well be mentioned. The measurements for the iron rod should be made by the surgeon himself, and in making them, he should commence from below upwards, measuring in detail with a piece of

common tape. The measurement from the tip of the toes, to the flexure of the ankle, should first be made for the foot piece; then, from there, to an inch below the tuberosity of the tibia, for the leg piece; then, five or six inches should be allowed for the diameter of the portion of a circle which arches over the knee; and, last of all, the measurement for the length of the thigh portion should be made from two inches above the patella, to the fold of the groin. This allows for the ordinary amount of bone removed in the incision, which usually varies from one and a half inch to two inches. If these measurements are not carefully taken, the surgeon may find to his annoyance a rod quite unsuited to the limb presented to him for application after the completion of the operation, which will necessarily delay the final adjustment till a properly constructed rod has been procured.

The Gooch splint should not be made too broad, nor of too *thin* wood. The amount and extent of the cutting out on each side side of the splint is of less moment. If not sufficient, it can easily be rectified by means of a pocket-knife at the time of the operation. The opening below for the heel and tendo Achillis should, however, be seen to, that it may be at least three-quarters of an inch wider than the transverse width of the tuberosity of the os calcis. If it is not so, it is apt to press unpleasantly, even when well padded, against the malleoli. Should this have been overlooked, and occasion annoyance after the apparatus has been applied, the pressure can easily be relieved at any time by inserting a portion of wood beneath the heel, between the two lateral extremities of the splint, where they project beyond the sole of the foot. This piece of wood, to be of use, must be longer than the greatest breadth of the malleoli.

It has been oftener than once suggested to me that, with the gypsum bandage, the Gooch splint, or, in fact, any posterior splint, is an uncalled-for addition and complication of the apparatus. I think this is a mistake, for, after the operation, when the parts are very movable and easy of displacement, even when the patient is fully chloroformed, it affords a great additional security that the apposition of the cut osseous surfaces shall be maintained till the gypsum has consolidated, that we can adjust the limb upon a splint. Thus it is rendered more firm than it could possibly be with the rod alone, not only during the application of the bandages, and the application and setting of the cream of gypsum, but throughout the whole period the apparatus is retained. Furthermore, the splint behind serves to diffuse the pressure of the bandage, and to prevent its girding the limb, and interfering with its circulation. The open wove bandages are preferable to the common cotton or linen bandages, because their open structure fits them better

for readily absorbing the gypsum, and forming along with it a tough and hard case, softly padded on its inner surface.

The gypsum may sometimes constitute a difficulty in employing this apparatus. When the plaster-of-Paris is of fresh quality, recently burnt, or, at least, if old, secured from air and moisture since it was first burned and ground in an air-tight case, no difficulty should be experienced. Mistakes may be made by one unused to its application, in mingling it with water; and the usual mistake is rather on the side of making the cream too thick than too thin. The plaster powder can usually be best mingled by being sprinkled into the water from the one hand, while the plaster and water are stirred together with the other. This should be effected in a common wash-hand basin. If experienced in the use of the gypsum, or if possessed of an abundant supply, the whole quantity likely to be required may be prepared at once, just before it is to be applied. If, however, the operator is inexperienced or inexpert in its employment, he may have it made in two or more smaller quantities, so as to secure himself against the plaster hardening too quickly for his rate of application.

I have been asked if this method of treatment is original? So far as I know, the only anterior suspension splint which has been employed or recommended is that of Dr. Nathan Smith, of Baltimore. The nature of that splint, and its essential difference from the splint and apparatus I have just described, will be at once perceived from the following extract from Professor Gross's work on Surgery:—

"Professor N. R. Smith has for a long time treated fractures of the thigh with great ease and success with what he calls the *anterior splint*. It consists of a single piece, made of wire, of the size of a No. 10 bougie, and bent at each extremity—the whole representing the form of a long parallelogram, 3 inches wide above, and $2\frac{3}{4}$ inches below. It must be long enough to reach from a point a little above the anterior spinous process of the ilium, to an inch beyond the toes, when the thigh, leg, and foot are extended, 3 feet 8 inches being a good average length for adults. The side pieces are firmly connected by cross pieces, at a distance of about 8 inches. Thus constructed, the wire frame is easily bent to suit the case in hand. The angle at the tibio-tarsal joint, 6 inches from the extremity, is about 120°, to secure an easy posture for the foot; that at the knee, and the one at the hip are each about 160°,—the latter being 7 inches from the upper extremity. The splint, properly padded, or lightly wrapped with a muslin bandage, and secured to the limb by a roller extended from the toes upwards, is suspended, by means of a pulley, cord, and loops, to the ceiling,—a compress being placed upon the instep, and another upon the groin,

to ward off pressure. The proper position of the hooks is a matter of great consequence. In general, the upper one should be attached nearly over the seat of the fracture, and the lower a little above the middle of the leg,—the object being thoroughly to equalize the pressure of the splint. The roller confining the apparatus should be well stitched, to prevent it from slipping, and great care taken that it do not make undue constriction. This apparatus, the efficacy of which has been thoroughly tested in numerous cases, is exceedingly light and comfortable, and is equally well adapted to fractures of the thigh and leg, in every portion of their extent."

This apparatus of Dr. Smith would, I have no doubt, be perfectly capable of adaptation to cases of excision of the knee, just as it is for cases of compound or gunshot fractures of the thigh or leg, or for cases of excision of the head of the femur; but the advantage over the single rod apparatus would, I think, be more than doubtful. Its double line of wire on the outer and inner side of the anterior aspect of the limb would, I should fear, give rise to a considerable interference with the line of incision, while the want of the posterior splint and the adherent gypsum bandage, which forms an essential part of the apparatus I now recommend, would detract considerably from the firmness and immobility of the leg and thigh during the process of gradual healing and consolidation.

[Dr. Watson concludes his article on the above-named operation by a consideration of the following moot points connected with it.]

First, then, with reference to the allegation that incisions freely laying open the whole extent of a suppurating joint, combined with complete repose, effected by splints, gypsum apparatus, starch bandages, or otherwise, may with perfect propriety be substituted in most cases where excision of the articulation could be satisfactorily substituted for amputation. Such a statement can only hold good where the lower extremity is concerned, and where the limb is nearly in the straight position, or where with tenotomy and forcible extension under chloroform a like position could be obtained. I apprehend, in all such cases, there is a very great difference in the after progress and result to be observed from the conditions obtained by excision. Where the bones undergoing more or less diseased action are kept in steady contact, no excision being practised, the tension and counter pressure of the osseous surfaces thus maintained must tend, in many cases, to determine farther suppurative progress, farther ulceration, it may be, in some cases, actual necrosis of considerable fragments of the cancellated tissue of the opposed bony surfaces. When, on the other hand, excision

is practised, complete relief is at once afforded to all the tension, and ill results due to further destruction within the limits of the field of operation rarely occur.

2. It may, perhaps, be asked, when such admirable results are obtained from excision of the elbow-joint, in the shape of a movable articulation, scarcely less useful or seemly than the natural joint, and infinitely more serviceable than an anchylosed one, why should we rest content in excision of the knee with a stiff limb? There are both theoretical and practical objections to this suggestion. The theoretical or analogical reasons are:—
1. That the elbow-joint is useful in virtue of its freedom of movement in every direction, so long as the approximated osseous surfaces do not actually pass each other, while in the knee any movement which interferes with the complete rigidity of the limb as a column of support, capable of sustaining the weight of the whole trunk, renders the limb almost unserviceable in progression. When, for example, the muscles fail to lock the knee-joint in complete extension, walking is almost an impossibility. Again, while an ununited fracture of the arm is more an annoyance than a cause of incapacity in the affected arm, an ununited fracture of the thigh disables the patient till the limb is in some way rendered rigid. It is further easily demonstrated in any case of excision of the elbow-joint where the arm is in every respect most perfectly useful as a prehensive organ, that the patient can rest no weight upon it. I have seen a patient whose elbow-joint has been excised scrubbing a floor most energetically with the affected arm, and resting her weight upon the sound limb; on asking her to transfer the scrubbing-brush to the hand of the sound limb and support herself upon the arm operated upon, in making the attempt she at once fell over upon that side, the limb doubling beneath her weight. There is this manifest difficulty in attempting, in excision of the knee joint, to obtain a movable articulation which shall be of any use to the patient, that in making the union flexible in one direction it must be flexible in all directions equally. Thus the tendency to bend outwards or inwards would be as great as the extent of the motions of flexion extension, and as we have seen that in the after treatment there is a tendency to bow outwards, this would in all probability, be the direction in which the flexure of the limb would occur when the weight of the body was borne upon that extremity.
2. The practical difficulties which have occurred in attempting the formation of a useful limb with only a fibrous union at the site of the excision are, I think, sufficient, so far as our knowledge at present goes, to forbid its repetition. It is no new proposal this of a movable joint. Mr. Syme, so long ago as 1831, seems, in his early essays, to have been in favour of such

an attempt. He says:—"During the cure it does not seem proper to insure absolute rest in order to obtain a true anchylosis or osseous union, since the very long bone that would thus be formed, besides been extremely inconvenient to the patient, by rendering the limb perfectly rigid, could not fail to expose it to a great risk of fracture, by affording long levers to forces acting at the extremities. A great degree of flexibility, on the other hand, would unfit the limb for support and progressive motion, so that while perfect immobility and free motion ought to be avoided, a slight degree of flexibility ought to be promoted. The chief difficulty of the cure consists in preventing the tendency to bend outwards, which is always strong, and if not counteracted, most injurious to the appearance and usefulness of the limb.

I am also informed that in those cases in which Langenbeck has performed excision of the knee, he has adopted measures calculated to obtain a movable articulation, but that the result has been the necessity of resorting to amputation in every case. Such are the reasons, theoretical and practical, which have prevented me from making any attempt in this direction, and which meanwhile appear to me likely to influence practical surgeons against the adoption of a method of after treatment calculated to obtain such unsatisfactory results.

3. The method by which I have practised the excision has, in every instance except one, been by means of the semilunar incision, raising a long flap from the anterior surface of the articulation. The one exceptional case in which I employed an elliptical incision, crossing the front of the joint, and including the patella within its limits, was one in which the operation was practised on account of compound comminuted fracture of the patella. Here the lacerated condition of the integuments, together with the necessity to effect the removal of the comminuted bone, made this method preferable to any other. In employing the long anterior flap as a means of gaining access to the articulation, I have preferred it for four reasons, chiefly:—1. That while it opens up the parts to be dealt with to both sight and touch more thoroughly than any other, it is easily and rapidly mapped out by a single curvilinear sweep of the knife. 2. That when its extremities are carried behind the line to the condyles they form a complete and efficient drain for the whole extent of the cavity formed by the incision. 3. That its margin corresponds in a less degree than any other to the line of section of the osseous surfaces. 4. That the flap so raised will serve for amputation of the thigh through the condyles, should the state of the joint render that advisable after excision has been completed. The H incision, the simple transverse incision, the lateral incisions, both straight, or one straight and the other

curvilinear, I have employed on several occasions in operating upon the dead body, but none of them have seemed to me to possess any such superiority over the long flap as to lead me to employ it in practice. They have certain advantages, it is true, which I readily grant, such as admitting in the case of the H, the transverse, or the elliptical incision, a more easy removal of the patella, if that is thought essential or desirable in any given case; but as I have always attempted to retain the patella where this is possible, incisions specially suited to favour its easy removal have not seemed to me to possess any advantage in this operation. If the articular surface of the patella is affected by disease, the gouge will usually enable its diseased tissue to be easily removed to the desired limits as regards both superficial extent and depth. Besides, it is well to bear in mind the practical fact that it is rare to find any such extent of disease in the patella as to determine the necessity for its removal,—an observation in morbid anatomy which its position as a sesamoid bone might almost lead one *à priori* to anticipate. The lateral forms of incision, straight on each side, or straight on the inside of the knee and curvilinear upon the outside, were devised for the purpose of leaving, not only the patella intact, but the ligamentum patellæ as well. This may seem at first sight an advantage, and were a useful movable articulation attainable as a result, it would be so without doubt; but as such has not hitherto been known to follow upon this method of operating, the difficulties which it creates in the manual procedure should be sufficient to condemn it.

Perhaps it may be asked, why I have retained the patella? My reply is, that (1) its removal is unnecessary in most cases; (2) its presence in the flap bears up the soft parts from the line of incision, and, without preventing consolidation, helps to keep them away from the cut margin of either osseous surface; (3) that its removal occasions more bleeding; and (4) that the hollow left after its removal from the centre of the long flap leaves a hollow cavity in which matter bags, and requires a separate incision to drain it efficiently.

4. The patients whose cases I have narrated are all adults. I have not performed the operation in any child or adolescent. I have been deterred from doing so by the small prospect which the removal of the epiphysis of the femur and tibia must afford of the after growth of the limb proving commensurate to that of the rest of the body. In children I have hitherto regarded amputation as a preferable operative procedure. I believe I shall continue to do so until I have had satisfactory evidence that the limb grows, or that the short and shrunken limb is capable, with the aid of a wooden pin, to support the superin-

cumbent weight of an adult body more satisfactorily than a thigh stump and a wooden leg.

5. In regard to instruments requisite for the performance of the operation, I need say nothing further than that I have required nothing more than a large bistoury in a firm handle, and a common amputation-saw with a back which yields as the blade cuts its way through the condyles of the femur or broad head of the tibia. Various ingenious devices have, however, been recommended and employed by others in this extremely simple operation for dividing the osseous tissues. Among these, Mr. Butcher's saw, Symonovsky's saw modified by Lüer, the old double-toothed saw of Moreau, and the chain saw recommended by the late Dr. Jaffray of Glasgow, in his edition of Park and Moreau's works on excision of the joints, specially deserve mention. There can certainly be no objection taken to their employment if the section of the bone were more easily or nicely effected by means of them than by the common amputation-saw. But as one and all of them are less easily manipulated, and there is no evidence in favour of their effecting this work more smoothly, I cannot conceive why instruments, certainly well suited for the key-hole work or the pattern sawing of the cabinet-maker, should be imported into the armamentarium of surgery, or made of such great moment in the performance of an operation which requires neither sections in curves, in zig-zags, nor in dovetail patterns.

I once heard a surgeon desiderating some instrument by which two smooth sections of the tibia and femur might be easily effected in excision of the knee, as he had seen difficulties occur from a want of capacity in the operator to cut two flat surfaces, which, when laid *in situ*, produced a straight limb. It may have been a legitimate wish upon the part of so clumsy an operator, and were the saws we have named capable of affording such facilities, we should strongly recommend them to his attention; but, as they are certainly not fitted to afford such assistance, a simpler expedient would perhaps be more easy of adoption, viz., that until a man acquires the very moderate degree of command over his hands and eyes necessary for the performance of so simple an operation, he had much better totally abstain from engaging in the operative department of his profession.—*Edinburgh Medical Journal, January and April*, 1867, *pp.* 607 *and* 935.

42.—ON CASES THAT BONE-SETTERS CURE.

By James Paget, Esq., Surgeon to St. Bartholomew's Hospital.

[In the large majority of cases the treatment adopted by bone-setters, in all cases of injury to joints of whatever nature, is

wrenching and other movements of them. It is impossible to estimate the amount of mischief which may be done by this treatment, but it is sufficient to know that it sometimes does good.]

What, then, are the cases that bone-setters cure with their practice of wrenching?

First, of course, they have a certain number of real fractures and dislocations which they reduce, and of old ankyloses which they loosen. Of these, I need say nothing; for I believe there is nothing in their practice in these cases which is not as well, or better, done by regular surgical rules.

Next, there is a rare accident which a wrench may cure, and which, if you are not on your guard, you may fail to make out; namely, the slipping of a tendon. I have known the tendon of a peroneous longus slip to the front of the outer malleolus; and an extensor tendon of a finger slip over the heads of the metacarpal bone and first phalanx; and here, from our museum, is the long tendon of a biceps slipped from its groove. Of these accidents, the first two may be made out by feeling the displaced tendon and the gap where it should be; the third may be at least guessed at by the signs which Mr. Soden has pointed out in his case, related in the *Medico-Chirurgical Transactions;* the slight forward prominence of the head of the humerus, its drawing up under the acromion, and the pain at the lower end of the biceps on stretching it. As to this displacement, however, I doubt whether it would be ever so certainly made out as to be fairly reduced; the others, at the ankle and the finger, should be remedied by relaxing the slipped tendon as extremely as possible, and replacing it with lateral pressure and sudden stretching.

Some other tendons may slip, I believe, like these; the tendon of the popliteus appears very likely to do so; and I can hardly doubt that a bone-setter has occasionally done, unwittingly, a lucky trick, when, with wrenchings and twistings of a joint, he has made some dislodged tendon slip back to its place.

But there is a set of cases much more common than these, which may be cured with wrenching and rough movements; namely, the so-called internal derangements of joints. The knee-joint is by far the most frequent seat of this injury, whatever it is; but the like occurs in the lower jaw-joint; and I have known very similar signs of injury at the hip and elbow. The most marked sign is that, while the joint is being moved in some ordinary action, something is felt slipping or suddenly caught between the bones, and a great pain comes, and the joint is locked. It will move in one direction, not in the opposite one: just like a hinge with a stone in it (as a patient described it to

me). The locking of the joint, which is, usually, at moderate flexion, is soon followed by effusion of fluid into it, and other signs of more or less acute inflammation of the synovial membrane; and, if nothing be done, these last for some days, or even for some weeks, before, with subsidence of the inflammation, the joint gradually regains mobility.

Many of these symptoms are like those due to a loose piece of cartilage in a joint—a much rarer condition. But, with loose cartilages, joints are not, I think, often locked for any length of time; they are stopped with extreme pain when the cartilage gets between the bones, but it soon escapes and they go again. In some of the cases of what I am calling locked joint, at the knee or lower jaw, it is probable that one of the interarticular cartilages slips and is nipped between the bones. We have, in the museum, a cast from a knee in which it is certain that this happened. But in some cases it seems more likely that a fold of synovial membrane, or a portion of capsule, is caught and nipped. However we may explain the accident, it is one of those that may be cured by the bone-setters. Such movements as theirs are not, indeed, necessary; and none should be practised recklessly or without plan; but force may be requisite, and, if used knowingly, will certainly set a locked joint right again.

Sometimes a patient learns for himself how to unlock his joint, and can do it gently, first, in the case of the knee, bending, and then with slight rotation slowly stretching it. But he may need more force than he can use for himself; and you may apply it better than a bone-setter can.

In the case of the knee, the "lock" usually takes place with the joint moderately bent and the leg rotated outwards. You must unlock it by extremely bending the joint, then rotating the leg inwards, and then suddenly and forcibly extending it. In the same manner, for any other joint that appears to slip and lock, you must observe the direction in which the patient can easily move it, and the direction in which movement is impossible or very painful; then you must move it, first, extremely in the former direction, and, secondly, forcibly in the latter. The manœuvre is sometimes extremely painful; and the force required for success may be greatly augmented by muscular resistance. In either case, the use of ether or chloroform may ease both the patient and yourself.

A fourth set of cases that may be cured with wrenching, or other forcible movements, includes those in which injured joints are held stiff, or nearly stiff, by involuntary muscular action. You may meet with such cases in patients of any age; but they are most frequent among the young. Sometimes after well treated fracture near a joint; sometimes after a sprain; some-

times when a joint has been hit hard—stiffness remains, which is due solely to muscular action ; and this stiffness in some cases is constant, and in others ensues on slight attempts at motion.

Any joint, I believe, may be in this condition at any time after an injury. I have seen it at the elbow, shoulder, cervical spine, hip, knee, and ankle ; in some instances a few hours after the injury, in some, several weeks. You may know this muscular kind of stiff joint by this, among other signs ; that the stiffness is not a dead block, as if by meeting of displaced bones, nor has rigid resistance, but yields a little, as if with the "giving" of a firm elastic substance which instantly recoils. Besides, you may generally feel the muscles in action ; not hard and vibrating as if with all their force, but firm, steady, and resisting. If, however, you have any doubt about the diagnosis, chloroform will settle it. As soon as the patient becomes quite insensible, the muscles relax, and the previously stiff joint becomes freely movable.

Herein appears the best mode of cure. Bonesetters violently move the joints against the muscular resistance till the muscles are wearied and beaten, and you may do the same ; but the proceeding is very painful, and often needs a painful repetition. A far better plan is to have the patient under chloroform, and move the joint quietly, and then to confine it with splints in a posture opposed to that in which it was stiff. After a few days, it may be moderately exercised, douched, and shampooed ; but in the intervals of this treatment the joint should be confined with the splints, if it should appear to be becoming stiff again.

You may sometimes see another condition, very like this involuntary muscular rigidity of joints, in young children. If one of its limbs be hurt, a young child will sometimes hold the limb steadily in one position, and complain if it be moved. Thus, a child, whose thigh has been strained, will stand on the other leg and keep the hurt thigh lifted up, as if for extreme disease of the hip-joint ; or, for similar hurts, will, for even many days, keep its arm close to its side, or its elbow-joint steadily bent.

Perhaps some of these cases are the same as those I last spoke of ; but in many of them the muscular fixing of the part has seemed to me not involuntary. It is more like a trick, or an instinct of fright, lest the part should be hurt again. Certainly, the muscles relax instantly in sleep, and not unfrequently when the attention is distracted from them.

I suppose that bone-setters would cure this state with their panaceal pulling ; but, happily, they are allowed to have but little practice among children. Happily, I say, for children's joints are much more imperilled by violence than are those of older patients ; and you cannot be too cautious in concluding,

when a child holds a joint fixed, that there really is no disease or serious injury. All the evidence must be negative; and an oversight may be disastrous.

However, you need not use any kind of force in this kind of contraction in a child. If the part be only allowed a few days' rest, it will get well; unless, indeed, it be seriously damaged—in which case, you will have done well by avoiding all violence.

In another set of cases, there is no doubt of the voluntary character of the muscular rigidity of a joint. You saw lately a girl in Lawrence Ward who wilfully resisted all movements of a hip that had been only slightly hurt. If a bone-setter had wrenched her joint, it might have served her right, and the pain might have cured her temper. But she recovered just as well when she saw that she did not deceive us and was not pitied.

Now, among all these cases of muscular difficulty, there is a good harvest for bone-setters; and, without doubt, their remedy, rough as it is, is often real. Yours may be as real, with much less violence; and, with better diagnosis than they can ever make, you may do none of the harm that they often do.

But there is a yet larger class of cases which bone-setters sometimes succeed in curing very quickly; namely, ordinary sprains.

I cannot doubt that some recently sprained joints may be quickly cured, freed from pain, and restored to useful power, by gradually increased violence of rubbing and moving. This method of treatment has many times been introduced into regular surgery; but it has never been generally adopted, or, I think, long practised by any one. I suspect that it sometimes does no good, and sometimes does harm enough to disgust an honest surgeon.

I believe that the best mode of applying this plan of treatment is, to begin by handling, rubbing, and pressing the sprained part and its neighbouring structures very gently. After doing this for fifteen or twenty minutes, the rubbing and pressing may be increased in hardness, and the joint may be more freely moved, especially in the direction opposite to that in which it was forced by the accident. Another quarter of an hour or more thus spent, is to be followed by rougher proceedings of the same kind, till even severe pressure and wide and violent movements can be borne without pain; and then, in hour or so, the cure is deemed complete, or so nearly complete as to require only a slighter treatment of the same kind on the next day.

I cannot tell you in what kind or proportion of recent sprains you may employ this treatment; indeed, I cannot advise you to use it at all, unless by way of trial in very healthy men. For I do not doubt that it will sometimes do harm; and the greater quickness of cure which it may achieve is not worth a risk, while

we can always employ such safe, and not slow, means as the combined rest and support of the sprained parts which are given by strapping or the starched or plaster-of-Paris bandage. In short, this rough-rubbing and hard-pulling treatment of recent sprains seems to me one of those dangerous remedies which, though I believe in their occasional utility, I would rather not employ till I can discriminate the cases in which they will do good from those in which they will do harm.

Such discrimination, difficult as it may be among recent sprains, is not very difficult among old ones; that is, among cases in which the ill effects of sprains remain long uncured. It is among these cases that bone-setters, and especially those who combine rubbing and shampooing with their "setting," gain their chief repute.

Among "old sprains," you will find a strange variety of cases—chronically inflamed joints, each probably bearing the marks of the constitutional disease or unsoundness of its possessor; and loose joints, and slipping, and creaking, and weak, and irritable joints, and many more. To all these, mere bone-setting does harm, or no good; and rubbing and shampooing are of little, if any, use; indeed, to a really inflamed joint they would generally be mischievous. But among "old sprains" are not a few cases in which a joint, after long treatment, remains or becomes habitually cold. It is generally stiffish and weak, sensitive, aching after movement, or in the evening or at night, sometimes swollen, puffy or œdematous, but not with an "œdema calidum." Whatever else it is, it is cold, or, at the most, not warmer than the healthy fellow-joint. Among these cold joints, bone-setters and rubbers gain, as I said, great repute; and all the more because they often get the cases after the patients have become tired and discontented with a rather over-careful surgery. Admirable as is the rule of treating injured joints with rest, such rest may be too long continued; and in every case in which it has done full good, it must, in due time, be left off. With rest too long maintained, a joint becomes or remains stiff and weak and over-sensitive, even though there be no morbid process in it; and this mischief is increased if the joint have been too long bandaged, and still more if it have been treated with the cold douche.

I need hardly say that it may be sometimes difficult to decide the time at which rest, after having been highly beneficial, may become injurious; or that the decision is always a matter of grave importance. On the other hand, you and the patient may be losing time through over-caution; on the other, the risk may be incurred, through rashness, of renewing inflammation in a damaged joint. I believe you will be safe, if you will take the temperature of the part for your guidance. If the part be

always over-warm, keep it quiet; if it be generally cold, or cool, it needs and will bear exercise and freedom from restraint of bandages, with friction and passive movements, and other similar treatment of the reviving kind. And of this you may be the more sure when the cold integuments over the joint are dusky pink or purplish, or become so when the limb hangs down, and when there is little swelling, and when pain is much greater than is accounted for by any appearance of disease.

I do not know whether bone-setters make any discrimination among these cases; and I do not advise you to adopt their rough method in any case; for though they may, when successful, prove emphatically the utility of movements for old sprains, yet the same good may be more safely done with gentler means of the same kind. Exercise of the hurt part should be gradually increased, and always followed by long repose; and the frictions and shampooings should be gradually made harder and more rough, and the passive movements gradually extended. Always, the part, if itself cold, should be, by any means, kept warm; and always the patient's constitutional defects should be watched, and, if possible, amended; for very commonly the chief hindrance to the recovery of a sprain is not local, but some general wrong—gout, chronic rheumatism, or struma, or hysteria, as it is called.

An "hysterical joint" is, indeed, sometimes a rare opportunity for a victory for a bone-setter. Cold, weak, useless for want of power of will, intensely sensitive, subject to all the seeming caprices of a disorderly spinal cord and too vivid brain,—such a joint as this may be cured by the sheer audacity with which it is pulled about. If nothing in it but its portion of the nervous system is in fault, this may be sometimes cured through influence on the mind. And so not only bone-setters, but the workers with Mesmerism, and tractors, and oils, and distant or superficial electricity, can sometimes cure hysterical joints: for the patients love to be cured with a wonder; and the audacious confidence of all these conjurors is truly wonderful.

From all this, you may see, that the cases that bone-setters may cure, though more by luck than by wit, are not a few. I think it very probable that those in which they do harm are still more numerous; but the lessons which you may learn from their practice are plain and useful.

Many more cases of injured joints than are commonly supposed to be thus curable, may be successfully treated with rough movements—wrenching, pulling, and twisting. The cases that are thus curable I have endeavoured to point out to you. Be on the watch for them. But remember always that what may be treated violently may be treated more safely and as successfully with comparative gentleness; and that, in some cases, you

may very advantageously use chloroform or ether. And remember, also, that no degree of violence, not even such movements or exercises as I have advised, can be generally safe in the treatment of injured joints, unless when directed with a skilful discernment of the appropriate cases.

Learn then to imitate what is good and avoid what is bad in the practice of bone-setters; and, if you would still further observe the rule, *Fas est ab hoste doceri*, which is in no calling wiser than in ours, learn next what you can from the practice of rubbers and plaisterers: for these also know many clever tricks; and, if they had but educated brains to guide their strong and pliant hands, they might be most skilful curers of bad joints and many other hindrances of locomotion.—*British Medical Journal, Jan.* 5, 1867, *p.* 1.

43.—ON A NEW STYPTIC AND ADHESIVE FLUID—STYPTIC COLLOID.

By Dr. Benjamin W. Richardson, M.A., Senior Physician to the Royal Infirmary for Diseases of the Chest.

[The fluid named by Dr. Richardson "Styptic colloid" is a compound fluid which is at one and the same time a styptic, an antiseptic, and a complete means of excluding wounded, abraded, or ulcerated parts of the body from the influence of the external air.]

My mind was led to this matter as long back as the year 1852. In that year Signor Pagliari, of Rome, announced the discovery of a new styptic, possessing, as he asserted, remarkable properties for arresting hemorrhage. Having made some of this solution, I subjected it to careful experiment, and reported the results to the Medical Society of London. The report based on the facts elicited was not favourable to the new remedy, and as other experience of it confirmed my own it soon lost the popularity that at first surrounded it. The styptic of Pagliari's was composed as follows:—

Gum Benzoin, eight ounces;
Alum, one pound;
Water, eight pints.

The alum and the benzoin were boiled for eight hours in water, fresh water being added to make up the loss by boiling. The solution as a styptic was found inferior to lunar caustic, but it was superior to a simple solution of alum. It was antiseptic, but was not adhesive.

In succeeding years I made several attempts to produce a better fluid; but it was not until last year, when I was specially

studying the applications of ether to practice, that I saw the true principles on which to proceed.

The use of collodion, or guncotton dissolved in ether, had for some years been recognised as of great service in covering wounds, and as I found that collodion was very easily diffusible in the form of spray, it seemed to me that it might be applied in that form with advantage, and might even be made to coat a bleeding open surface. But on experiment it came out that, in whatever way applied, collodion fulfils but a small part of the required duty as a styptic and a wound-healer. In the first place, it mixes indifferently with blood; in the second place, it forms but an imperfect adhesion; and lastly, it allows the transudation of air through its structure when laid upon a moist surface, and particularly upon the body, which is at all times throwing off watery vapour. At the same time the principle of the collodion process was excellent: to lay down from a fluid a deposit of solid matter by the evaporation of a volatile solvent was sound and beautiful action.

The next point in advance, therefore, was to combine, if possible, with the ether and guncotton some other substance which, being also soluble in ether and capable of deposit by the evaporation of the ether, would combine chemically with the blood, with the albuminous exudative matter of a wound, or with purulent matter.

The idea only was wanted to secure the object in view. There was one substance which answered all these indications—I mean tannin. A mixture, therefore, of xlyoidine, a substance resembling guncotton, and of tannin was formed into solution with ether, and from that came what I designated "*zylo-styptic ether.*"

Brought into practice, the advantages of this solution as a means for stopping hemorrhage at once became obvious. Indeed, as a means for the arrest of hemorrhage, less than the application of a ligature to an open vessel, the spray leaves little to be desired. The extreme cold produced by the evaporation of the ether acts directly on the water of the blood, the tannin solidifies the blood by combining with it, and the cotton acts as a plug: thus every indication for arrest of hemorrhage is secured.

But in observing the action of the styptic spray, I soon became impressed with another fact—viz., that after the application to decomposing and fœtid wounds and sores the fœtor entirely disappeared, the wounds commenced to heal with great rapidity, and a kind of natural covering appeared to form out of the secretion by its combination with the dressing above it.

This observation has led me to simplify the application still further until it has come into this convenient form, a mere

solution capable of being kept on the table as gum is kept, and of being applied with a soft brush in the same simple way.

The process of manufacture of the fluid is tedious, but sufficiently easy. The object to be aimed at is to saturate ether entirely with tannin and a colloidal substance, xyloidine or guncotton. In the first step of the process, the tannin, rendered as pure as it can be, is treated with absolute alcohol, and is made to digest in the alcohol for several days. Then the ether, also absolute, is added until the whole of the thick alcoholic mixture is rendered quite fluid. Next the colloidal substance is put in until it ceases readily to dissolve. For the sake of its very agreeable odour, a little tincture of benzoin is finally admixed.

The solution is now ready for use. It can be applied directly with a brush, or, mixed with equal quantities of ether, it can be applied in the form of spray. In order to give to the fluid a short name by which it may be known, I have called it "*styptic colloid.*"

Properties.—When the solution is brought into contact with an open surface of the body, the resultant phenomena are these: the heat of the body gradually volatilises the ether and the alcohol, and the tannin and cotton, as the ether leaves them, are thus left stranded on the surface in intimate combination. In proportion as the ether passes off, the blood or the secretion of the surface permeates the tannin and cotton; but tannin acts directly upon albumen, coagulating it, and transforming it into a kind of membrane, almost like leather. The cotton meanwhile unites the whole, gives substance to the mass, and adhesive quality. When all is solidified, the dressing becomes, in fact, a concrete, having a true organic hold or basis on the tissues; and as the tannin, if the solution be freely applied is in excess, any new exudative matter or blood is for several hours taken up by it, and the annealing is made the more complete.

Thus, by this dressing, the air is excluded from every possible point in every possible direction, not by a mere septum, but by the combination of the animal fluids with the remedy; and because the air is excluded and fluid is absorbed there is no decomposition—*i.e.*, no oxidation; and because there is no oxidation there is no irritation.

The styptic and adhesive qualities of this fluid are easily demonstrated by observing its direct action on blood, on serum, on pus, on albumen. You will see that it solidifies all these by mere contact with them.

To these properties I must also add that of complete deodorisation. Here is putrid blood, here putrid ovarian serum, here putrid purulent substance. They are unapproachable when laid

on an open surface, but we bring them into contact with the solution, and they are deodorised. Further, the decomposed substance is fixed by the tannin and rendered inert.

Modes of Application.—Having thus laid down the principles at work in this method of treatment, let me next pass to the modes of application. I have here an artificial limb; a portion of it is covered with thin skin to represent the ordinary skin. At one part, for the space of six inches by four, there is placed under the skin a spongy substance charged with blood and albuminous fluid. I will now make an incision through the skin, and expose the bleeding surface. Suppose this to be an open wound, the two flaps of an amputation. I close it with silk ligatures in five places. This done, I take a little cotton wool, tease it out finely in a wineglass, and saturate it with the styptic solution. Next, with a soft camel-hair brush, I apply the solution freely over the closed wound, letting it lie between the edges. If blood exude, it simply combines with the solution, making a mass much like red wax. I lay on the solution also for a little distance beyond the wound, and wait a few moments to allow for the evaporation of ether. Next I take from the wineglass the saturated cotton wool with forceps, and lay a seam of it half an inch wide and the eighth of an inch in thickness over the line of incision. Finally, I coat the whole over with another layer of the solution. wait until the layer is nearly dry, cover with a little dry cotton, and, if pressure be necessary, carry over the whole a bandage.

If time is a matter of importance, the evaporation of the fluid can be hastened by gently blowing with the warm breath over the solution as each layer of it is applied with the brush.

Presuming that a cavity has to be treated, the fluid is often more neatly and handily used as spray. Thus, in treating the roof of the mouth for carious bone, or in plugging a bleeding alveolar cavity after extraction of a tooth, the spray is excellent. We begin in such a case by applying the spray direct to the bleeding surface, and when a layer of deposit is formed we use that as a foundation for a thin layer of cotton wool ready saturated in the solution. Then we reapply the spray, and again cotton, until the whole operation is complete.

For bleeding or fœtid discharge from the uterus or vagina the spray is not advisable, because of the introduction of air. Here injection by the syringe is the best process, followed, if need be, by a plug of cotton wool saturated with the solution.

In cases of compound fracture, after the parts have been brought into apposition as far as is possible and fixed in the necessary position, the fluid should be poured slowly into the open cavity so as to fill it. Then the parts externally should be covered with a layer of cotton wool saturated with the solution.

On open cancer, and on suppurating or decomposing surfaces, the solution may be freely applied with the brush, and afterwards the parts may be covered with cotton wool saturated with the fluid.

In no case need there be any fear that irritation will follow the application of the solution. On the contrary, the action of it is so purely negative that it might be considered a sedative. It is not such in the technical sense of the term, but it so effectually covers the wounded and susceptible surfaces as to maintain what is virtually a sedative influence.

After a fresh wound has been once dressed with this solution, it requires but little further treatment. In the case of small wounds they may be safely left with one dressing. In process of cure the dressing will slowly be thrown off in the form of thick scale, and ligatures will also spontaneously come away. Even when the wound is very large, as after amputation, it is not desirable to try to open the wound unless there be systemic symptoms. In such case, in order to remove the dressing without pain, the bandage, if it be adherent, must be sponged at the adherent parts with a mixture of alcohol and ether, or with alcohol and water; this will set everything at liberty with ease and cleanliness. Water alone must on no account be used, neither hot nor cold.

The Fluid in Practice.—From these directions I may now move to the recital of a few typical cases in which this solution has been employed.

Hemorrhage after Tooth Extraction.—At the request of my friend, Mr. Thomas A. Rogers, of Hanover-square, I was summoned, on May 9th, 1866, at 10 a.m., to see a young gentleman who was suffering from a dangerous hemorrhage from an alveolar cavity from which a large molar tooth had been extracted. Mr. Rogers had extracted the tooth at five o'clock on the previous evening, and from then until my arrival the bleeding had never ceased. I learned from the parents that all their children suffered from the hemorrhagic tendency in an extreme degree. The young man was now in a state of very great exhaustion, and the flow of fluid blood was still continuous. Laying him upon the floor, with his head raised, I applied the styptic, in the form of spray, directly into the bleeding cavity, and with such force at first as to dislodge the little pool of blood there. Continuing the spray, I was soon gratified at seeing complete arrest of the hemorrhage. I now placed in the cavity a small pledget of cotton-wool saturated with the fluid, pressed it firmly home, and covered it with spray; thus, layer upon layer, I not only filled the cavity with cotton-wool and firmly set styptic, but builded up the space between the two adjoining teeth with the same substances until the gap in the middle

looked as if filled with what the dentists call a bone block. The bleeding was entirely arrested from that moment, and recovery was perfect. There was no sign of irritation in the wound, and when, four days afterwards, the plug came away, all the structures beneath were healed.

Severe Hemorrhage from Necrosis of the Upper Maxilla.—A gentleman suffering from syphilis, extremely aggravated by excess of mercury, was last year brought under the care of my friends Messrs. Musgrave and Milson, of St. John's-wood. I saw the patient with them in consultation many times, and we were all in much anxiety in regard to the roof of the mouth. The mucous membrane of the roof was thickened, red, percolated, and offensive; the fœtor was almost unbearable, and every evidence of necrosed bone was present. The soft covering of the palate at length gave way, the soft parts ulcerated, and about midnight on October 16, the necrosed bone loosened, and was partly displaced. In this way, the two descending palatine arteries were severed, and the most sudden and profuse hemorrhage followed. I was summoned, and soon after my arrival, Mr. Milson also came. Unfortunately, we had to send some distance for the styptic fluid, but meanwhile we tried, quite ineffectually, to plug with the perchloride of iron, and were compelled to trust to pressure with the fingers. When the styptic arrived, we played it freely in the form of spray over the bleeding points, and with instant effect in stopping the loss of blood. Then we plugged carefully with cotton, saturating each layer with the spray, and soon the mass set firmly, and no more blood was lost. By the time we had controlled the bleeding, we were gratified by the arrival of Mr. Paget, whom we had summoned; and as he, from having already tried the styptic, was content to trust to it, we did no more. It is the fact that this patient lost five pints of blood before the fluid was used, but the hemorrhage did not return, the fœtor no longer was present; and a few days later, assisted by Mr. Milson, I removed the dead bone. The removal laid bare a wide ulcerated surface or cavity, which we continued to plug with the styptic on cotton-wool; and so perfect has been the healing process that the cavity would now bear an artificial plate.

In Open Ulcer.—The styptic solution is equally good in cases of ulceration in other parts of the body, and from other causes. The son of a medical man was brought to me with a large deep ulcer on the face. The boy had a strumous taint, and for three months various remedies had been applied without any avail. I simply painted over the surface of the ulcer freely with the solution, and ordered that it should be steadily applied whenever there was fresh oozing of purulent matter. The

result towards cure was favourable beyond expectation, and in nineteen days the ulcer healed.

In Cancer.—My friend, the late Mr. Hitchman, of Leamington, consulted me in reference to a case of large open malignant ulcer of the breast in a woman of middle age. The discharge was most abundant, and the fœtor intolerable. Here, again, I suggested the free use of the styptic solution, and with the most useful effect. Pain was soothed by it, the discharge was arrested, and the fœtor was completely removed. The death of Mr. Hitchman has prevented me from knowing the result of the case, but in his last letter to me he reported that no previous treatment had given so much relief, and that the broken surface was contracting, and was, he thought, inclined to heal.

For Recent Wounds.—Leaving these cases of hemorrhage and of ulceration, I pass to the effect of the fluid in promoting the healing of recent wounds.

A lady, between 70 and 80 years of age, in coming from her bedroom caught her foot in the carpet and fell foremost on her head, receiving, by striking against a box, a large and severe wound on her forehead. The wound, triangular in shape, raised a portion of skin three inches long on two sides of the triangle. I treated the wound by putting in one suture at the apex of the triangle, and then painting the edges with the solution and covering them with cotton wool saturated in the solution. Not another dressing was required ; the wound healed at once without the slightest discharge, and leaving scarcely a scar.

In Amputation.—But the best case of recent wounds which I have to report is that of an amputation treated by the fluid as the dressing. The patient, a young gentlemen, was under the care of Mr. W. Adams for extreme deformity of the foot, requiring amputation by Chopart's operation. The operation was performed on Wednesday, February 13th of this year, and as the cuboid bone and os calcis were anchylosed, the saw had to be freely used. Several vessels had to be tied, and the ligatures were left in the usual way, suspended from the wound. When the lips of the wound had been brought together by wire suture, I coated the wound freely with the fluid, and the bandage was applied. Three days later there was no fœtor, no discharge, and no general symptoms, but as Mr. Adams was anxious to see the condition of the wound, I undressed it. To our delight, we found it healed throughout, but, unfortunately, from the bandage adhering to one of the long ligatures, I, in removing it there, tore open the newly-healed wound for the space of a quarter inch. At this broken spot about a teaspoonful of purulent matter formed two days later ; but this little break was very quickly reunited, and on the sixteenth day after the operation the patient was able to return to the country with

complete healing by the first intention, and without having suffered from one symptom of a constitutional kind.

I was never more indebted than to Mr. Adams for allowing me to put the fluid to this crucial test, nor can I thank him for this without also thanking him for permitting me to practise, and that also successfully, local anæsthesia by the ether spray in the first great cutting operations—viz., for the removal of a portion of the femur, and for partial amputation of the hand.

Points of Practice in Dressing.—The case of amputation to which I have referred leads me to notice two points of practice in respect to the dressing of wounds. In another similar case, I should suggest that, so long as there is no fœtor from the stump, no discharge, and no general symptom indicating the formation of pus, the part should not be touched nor interfered with in any way whatever for fourteen days. And, again, I would point out that should the surgeon feel it necessary to remove the dressing, he should scrupulously avoid the use of common water, either hot or cold. Water itself does not dissolve the styptic, and would only make trouble. The fluid to be used is a mixture of alcohol and ether, or equal parts of absolute alcohol and distilled water, warmed a little above the heat of the body.

Another point of practice worthy of note is simple but important. It is, that it is not good to leave the styptic in large quantities within a wound that is about to be closed for healing by the first intention. Thus left it combines with the blood in the wound, and forms a hard substance, which sometimes produces friction, and so causes evolution of heat and pain.

Combinations with the Styptic Colloid.—I have treated so far on the styptic fluid in its simple form. I should add, however, that as a base it combines well with the following medicinal substances, as you will see by the specimens now sent round:—

Creasote.—With the old creasote of the shops the fluid forms an excellent compound. The creasote acts well as an additional antiseptic, and also as a solidifier of albumen. It produces, however, some degree of irritation. The proportion is one minim of creasote to two drachms of solution.

Carbolic Acid.—With pure carbolic acid the fluid also combines. The compound so produced possesses the same properties as the mixture of creasote and the styptic. Five grains of the acid may be added to two drachms of the fluid. The combination is very powerful, but it produces some irritation.

Quina.—The pure alkaloid quina dissolves in the styptic fluid, and forms a good solution in the proportion of one grain to the drachm. The quina adds to the antiseptic power, but, I think,

takes away from the adhesive property. Proportion, half a grain to a drachm.

Iodine. — Iodine unites readily with the fluid, and five, or even seven, grains of it may be got into the quarter-ounce. The combination is most useful in cases where there is purulent or fœtid discharge from a surface surrounded with indurated tissue. The iodine produces no irritation.

Iodide of Cadmium.—Iodide of potassium and iodide of ammonium do not readily combine with the styptic; but iodide of cadmium, which possesses a similar physiological action, goes up in it readily. Half a drachm of the salt will go up in an ounce of the solution.

Bichloride of Mercury.—The bichloride of mercury is soluble in the solution, and the compound, in the proportion of the one-twentieth of a grain to one drachm of the styptic, is a most useful application in indolent syphilitic ulcers. I think this application would also be useful in lupus.

Morphia.—Morphia goes up well in the solution, and in irritable painful ulcer a compound of morphia and the styptic, in proportion of half a grain of the alkaloid to a drachm of the fluid, is of service. Pain is at once relieved, and healing is promoted. This compound on cotton would be good for a stopping of a hollow tooth to relieve toothache.

All the other narcotic alkaloids in their pure form go up in the solution—atropia, aconitina, and the rest. I have, however, no experience as to the value of such combinations in practice. This experience has yet to be learned.

Cantharidine. — This substance, on the addition of a little chloroform, can be taken up in the solution. The compound produces what may almost be called a dry blister, the fluid secreted being taken up as it is exuded by the styptic. There are cases in which this blistering fluid would be a considerable advantage; indeed, it would probably be an advantage in all cases in which a blister is required. Two to four grains may be used to the ounce.

Chloride of Zinc.—Chloride of zinc, which, in solution, has recently been used for the dressing even of recent wounds, makes a good compound with the styptic. Half a drachm of the salt dissolves readily in an ounce of the solution.

From these purely descriptive facts I pass to the subject of healing by the first intention.

On Healing by the First Intention. — When a surgeon puts his knife through a living structure, he exposes not vessels only, not nerves only, not solids only, not blood only, but interstitial fluid, as it is proceeding for solidification.

Having exposed this fluid, he leaves a surface of it that has been exposed whenever he closes the wound; and this is the great point to remember, that healing by the first intention, or no such healing, turns precisely on the physical condition in which this fluid is thus left. If the wound be closely and well bound up before the fluid has had time to undergo change, then the fluid passes into solidification, becomes a bond of union of the divided parts, and sets up true healing by the first intention. But if the fluid has time to undergo change, to pass into one of the stages of its decomposition, then it does not solidify, and there is no true healing of a direct kind. Fresh fluid coming down presses before it the original fluid, and the process, as it is vulgarly called, of "healing from the bottom," is the natural sequence if the case goes well. It is astonishing how quickly, in some cases, the interstitial combining fluid undergoes change on exposure to the air. There is a physiological experiment which proves this very perfectly. You are aware that Liebig once advanced the view that in the natural state the blood is alkaline, but that the muscular juice is acid. This view was maintained for years. In 1854, when I was working daily in the slaughter-house, studying the coagulation of blood, I was led to test the reaction of the muscles both of oxen and of sheep while the muscles were still irritable, and to my tests the reaction was always like that of the blood, alkaline. Such, however, was my respect for Liebig, and such the force of what may be called the habit of belief, I actually distrusted my own work, and thought, after all, Liebig must be correct, and I somewhere in error. At length, and while I was still hesitating on the matter, Du Bois Raymond boldly and truthfully came out with an exposition of the error of Liebig, by showing that during life the interstitial fluid in muscles is alkaline like the blood, but that if muscle be exposed to the air for the shortest period, there is a change to acidity. The facts are so; they admit of direct proof on the living animal, and, if care be taken in its preservation, they can be proved, for a short time, on the dead muscle, say the heart of a dead animal. We will test the point here with the heart of a sheep. This heart has been removed two hours, but kept excluded from air. I cut open a surface, test it instantly, and find a feeble alkaline reaction. I lay open the surface for so short a time as three minutes, and, testing again, I find it acid. In half an hour the reaction everywhere will be strongly acid. If the other tissues of a living animal be divided and tested in the same manner, the same phenomena are observed.

In some cases this change is so active that from three to four minutes is sufficient to create it over the whole of the surface of a large wound. In other cases it is longer deferred: in a warm

perfectly dry air it is deferred, in a very dry cold air it is deferred. It is quickened intensely by a warm moist air; it is quickened by an air charged with organic matter living or dead; and it seems as if there were peculiar conditions of the oxygen of the air, conditions of activity which also quicken it; a result quite natural, because the process is one of oxidation. Just as blood oxidises in the lung on its exposure to air, so this interstitial fluid oxidises when it is exposed to the atmospheric oxygen.

Suppose, then, the oxidation is established, what is the sequence? The sequence is disposition to further change. The fluid, modified in character, is no longer a fluid ready to enter into substance with the solid tissue with which it is in contact. It lies as foreign matter, preventing adhesion, and communicating acidity to the new plasma that is poured into it. From this state there may be three results :—

(*a*) The patient, being healthy and well provided with good plasma, and air, and specially water, being excluded from the wound, the new plasma may neutralise and throw off the old, and with some discharge there may be more or less of spaces in which there is healing by the first intention.

(*b*) The conditions being less favourable, the changed plasma, acting as a foreign body, may excite the production of great heat in the part—inflammation so-called. In this state the plasma will sometimes be re-transformed into a plastic, coagulable fluid, which will form adhesions with partial healing and some production of pus. Or in this state all the fluid may be transformed into purulent fluid—abortive plasma, which will be alkaline but not adhesive, which will protect the parts shielded by it from external oxidation, and will allow the natural plasma to build up new tissue from beneath—healing from the bottom.

(*c*) There is one more major condition. The plasma, from becoming in the first place of acid reaction, may run rapidly into alkaline decomposition, with complete disorganisation of all the colloidal parts, the interstitial plasma, the effused blood, the fibroid membrane, the osteoid and tendinous gelatine. When this disintegration occurs the constituents of the plasma are transformed into new and soluble compounds, susceptible of re-absorption into the organism, and even of absorption into other organisms. During this form of degeneration, not during the purulent form as was once supposed, the systemic malady, misnamed pyæmia, finds its origin. These phases, which I have described from their physical side, you will all recognise, with shades of difference, as *bonâ fide* parts of practice and of practical observation.

Returning from these points to the treatment of an open wound, whether that be caused by accident or by operation, we

are prepared to understand with precision many practical results to which we are blind so long as we are ignorant of the physics of the process of healing.

In the olden time, the chirurgeon, having no correct knowledge how to close a wound, and seeing bad results from bad closure, set his face against closing altogether, and, filling the wound with tar or pitch placed on tow, made it always heal, as he said, "from the bottom." In an age when there were no scientific principles to guide the surgeon, this practice was not bad; it prolonged the cure, certainly, but it saved the consequences of alkaline decomposition. The dressing, containing a good antiseptic—that is to say, a powerful preventive of oxidation—allowed the new plasma to produce new tissue, and so there was healing. The surgery was rough, but, in the main, effective. It is still a sound practice in cases where a large surface or an abraded surface has been a long time exposed to air before coming under the hand of the surgeon.

In time came Sir Kenelm Digby with his sympathetic powder as the bait and his reversal of the old practice as the success. Rub the instrument that inflicted the wound every day with the powder—that was the bait; tie up the wounded part quickly, tie it up in its own coagulating blood, and do not meddle with it for fourteen days—that was the cure.

Various facts since the time of the sympathetic knight have proven the soundness of his practice apart from his superstition. There have been many practitioners who their lives through have acted on this plan in the extremest cases, and with the most surprising results. Mr. Adams, in one of his works, tells us of a surgeon who treated every case of compound fracture with perfect success by simply bandaging, closely saturating the bandage with compound tincture of benzoin, and leaving the rest.

In the battlefields of Egypt operations performed under canvas, in perfectly dry, heated air, in which all decomposition of albuminous matter is impossible—in which air, in fact, albumen itself dries into a horny covering—the process of rapid healing was a marvel to those who witnessed it.

But the crowning facts which bear on healing by the first intention are those connected with the practice of subcutaneous cutting. I cannot make out that any true case of pyæmia has ever occurred after neat subcutaneous operation. In fact, in the results of subcutaneous section we see absolutely how, in an open wound, the prevention of cure is caused by some external influence brought to bear upon the wound. Except for this experience and the lessons it brings us, we might dream of con-

stitutional tendencies and such-like occult interferences with cure in open wounds; but the subcutaneous experience excludes them all.

The sum total of scientific fact lies, then, in this—that healing by the first intention is only prevented in any case by a change in the interstitial fluid which laves the tissues, and from which they are formed, the cause of this change being exposure to the combined influence of water and oxygen. With this understanding we learn the reason why some operations are more serious than others. The risk of opening serous cavities—for example, the peritoneum—is explained when we remember how larger a surface, covered with easily decomposable fluid, is exposed to the danger of decomposition whenever such a serous cavity is presented to the air. The peritoneum should never be opened except under special conditions. Thus:—

1. Let the operating chamber be small, and let few persons be present.
2. Let the temperature of the air be low—never above 55° Fahr.
3. Let the air be dry.
4. Let the air be rendered faintly alkaline by ammonia.
5. Let the operator have his hands protected with oil.
6. Let the operator be content not to put water or wet sponges into the cavity.
7. Let the operator forbid any hands except his own entering the cavity.
8. Let no ligatures hang out of the closed wound to admit either air or water.
9. Let the air in the cavity be carefully expelled as the wound is being closed.
10. Let the closing of the wound be so absolute that no action of the diaphragm or emptying of the viscera shall draw air afterwards into the cavity.

To secure healing by the first intention in ordinary wounds, it is necessary to treat an open recent wound immediately before closing it as follows:—

To remove from it all long ligatures.

To wash off the fluid with which it is covered, and then thoroughly to dry the surface, so that no water may be left to excite decomposition.

To bring every part into close contact, so that no moist air may be left behind, and when the lips of the wound are closed with suture, to seal up resolutely with a fluid which perfectly anneals structure, like the fluid I have here brought under notice.

To leave the wound in dry air; or, if that is not possible, to surround the parts with a simple substance, eager for water, but

not caustic in its action. Such a substance I place before you in the form of washed and dried laminaria or sea-weed ; a substance clean, light, and excellent as an absorbent of fluid coming from the body, or of water suspended in the surrounding air.

From the time of Sir Kenelm Digby until this hour, surgeons have fluctuated between the two extremes, of healing slowly "from the bottom," and of healing quickly through the mass "by the first intention."

I submit now that the time for this hesitation ought to be considered as over, and that the modern surgeon should neither hesitate, nor pause, nor tire, until he has made healing by the first intention a sure and certain portion of his art, and until he has lifted up that dark pall of surgical fever which the most eloquent of English surgeons tells us still enshrouds the most brilliant surgical exploits. I have aimed in the present lecture to give direction and solidity to this great work.—*Medical Times and Gazette, April* 13 *and* 20, 1867, *pp.* 383 *and* 409.

ORGANS OF CIRCULATION.

44.—NOTES ON THE PROGRESS OF ACUPRESSURE.

By Sir J. Y. Simpson, Bart., M.D., D.C.L., Professor of Medicine and Midwifery in the University of Edinburgh.

The great pathological and practical advantages which acupressure possesses over deligation have always appeared to me to be simple and decided. When an artery is closed by a needle, or by any other form of temporary metallic compression, the walls of the arterial tube are placed, and held together in apposition, by a material which does not tear their coats or irritate, like thread or silk, and that can be withdrawn in a day or two, at the will of the operator,—leaving subsequently no extraneous body whatever in the wound to prevent its speedy and complete healing. On the contrary, when deligation is employed—(1.) The two middle coats of the artery are systematically lacerated; and (2.) Its external coat is strangulated. (3.) This strangulation leads on inevitably to ulceration or molecular destruction of the external coat at the constricted part, and causes mortification of the artery at the tied point, and usually also below it,—just as a strangulating thread kills and removes a hemorrhoid, a polypus, or a wart. (4.) The small mortified point of the vessel becomes a dead and foreign body, and hence requires to be eliminated and thrown out of the living system by ulceration and suppuration,—so that there are as many dead sloughs, however minute, in each wound, and as many consequent points of ulceration and suppuration are set up—as there are arteries

ligatured in the wound. (5.) Besides, the ligature-threads, if of silk or hemp, rapidly imbibe animal fluids, which speedily decompose in them; and then, the ligatures, like so many single thread setons, irritate the contiguous tissues; and at last they only become—more or less slowly—set free by ulcerating entirely through the strangulated portions of the tied vessels. (6.) Hence arises the difficulty, or indeed the impossibility, of wounds containing a series of ligatured arteries ever uniting completely by the first intention; for such wounds are in the same condition as if diminutive morsels of dead flesh had been methodically and intentionally affixed with threads to their sides and walls. But other dangers follow. (7.) No surgeon would deliberately leave a patient after the shock of amputation in the neighbourhood of a foul sewer, or where decomposing animal effluvia could be inhaled. But a wound containing a series of dead, decomposing, putrefying sloughs — however minute these foul sloughs are individually—places the patient in perilous hygienic conditions; for morbific septic poisons can be imbibed by the open and absorbing surfaces of wounds, as well as inhaled by the lungs. "A poison," sagaciously remarked the late Mr. Travers, "admitted by a wound or raw surface, and a poison admitted by the lungs, are equally excitants of a specific constitutional irritation.

Professor Pirrie, in a series of most important observations and cases, maintains (p. 137) that acupressure "is not only the *easiest* of application, but the *quickest* method yet devised for arresting bleeding;" and a pupil of Dr. Pirrie's—Dr. Will—last week informed me that the rapidity with which Dr. Pirrie secures the open vessels after amputation, &c., by acupressure is "something wonderful,"—the movements of his fingers not being easily followed by the eyes of the attendants.

In advocating the practice of acupressure, I have always claimed for it two advantages—viz.

First, That it would yet be found the quickest and easiest mode of arresting surgical hemorrhage; and

Secondly, That its use, combined with the total absence of all surgical dressings, would *accelerate* the healing of wounds.

On the first of these points the evidence of Drs. Pirrie, Keith, and others, may now be looked upon as comparatively complete. But what of the other question—

Does it Accelerate the Healing of Wounds? — In his — the largest—portion of the conjoint treatise on Acupressure by himself and Dr. Keith, Professor Pirrie has described, with the most conscientious and scrupulous exactitude, all the special cases in which he used acupressure in capital operations; and I

will try here to summarise the results obtained. To understand these RESULTS,—which are far more important than the mere facility and and rapidity of the process,—let me first adduce the opinion which Dr. Pirrie holds as to what constitutes union by the first intention or by primary adhesion. In reference to this point Dr. Pirrie states: "The use of the ligature is attended with an insuperable obstacle to obtaining perfect examples either of immediate union or of union by primary adhesion without the formation of some pus. I have never allowed myself to call any case a perfect example of either of these two methods of healing where *a single drop of pus* was seen. Neither of these two methods of healing, in this sense, can be perfect in any case where the ligature is used. The immediate effects of the ligature—the changes by which its removal is rendered possible, and its presence acting as a seton in the wound—render more or less suppuration at the points of deligation and in the tracks of the ligatures inevitable. I never saw, in the experience of any surgeon or in my own, where the ligature was used, a perfect example of either of the two desirable methods of healing without any suppuration. I believe such a case NEVER *was and* NEVER *will be seen.*" (p. 138.)

We see in this paragraph how strict Professor Pirrie's definition of union by the first intention is, he considering no case a perfect example of it where "*a single drop of pus*" is observable. Yet in the course of his work he has described above a dozen cases of large surgical wounds, consisting of amputation of the limbs, excision of the mamma, removal of tumours, &c., where perfect and entire union by the first intention was obtained under acupressure, metallic sutures, complete rest of the wounded part, and the avoidance of all dressings; and he relates a series of other cases where the results were highly satisfactory, though the primary healing was *not* thoroughly and entirely perfect, because a small amount of suppuration was seen.

Dr. Pirrie tell us (p. 66) that he has used acupressure in thirty-two cases where the "major operations" of surgery were performed, besides employing it in "many minor ones." In every instance (he adds) "its use has been *most* satisfactory." Out of these thirty-two major operations, which he has given in detail—including seven amputations of the thigh—fifteen cases, at least, healed entirely by the first intention, or *more than one in three.* Out of his first eight cases of acupressure, one only of the wounds was cured entirely by immediate union, and without a drop of pus. Out, however, of his last twenty-four cases, fourteen of the wounds were healed by the first intention, and without a drop of pus—*or more than one in two*—showing, as was to be naturally expected, that he became more successful in his results as he became more extensively and intimately

acquainted with the practice of acupressure. To state these important facts im another form—

Among his first 8 cases 1 completely united—or 1 in 8.
Among his last 24 cases 14 completely united—above 1 in 2.

He had eight cases—among these thirty-two—of excision of the diseased mamma. In five of these eight cases the resulting mammary wounds closed at once, and without a single drop of pus.

Has any surgeon, living or dead, ever, in using deligation, met with such marvellous success as Dr. Pirrie has thus attained under the use of acupressure?

Could all the Hospitals of Great Britain, or of Europe, or of the World—if grouped and collected together—furnish within the same period of three years, as great a number of cases of large *operative wounds, where the ligature was employed, healed entirely by the first intention, and without the appearance of "a single drop of pus," as the one little Hospital of Aberdeen?—Sir J. Y. Simpson's Pamphlet, p.* 10.

45.—NOTE ON ACUPRESSURE.

By Lawson Tait, Esq., Member of the Surgical Society of Ireland, &c.

[It is singular that as yet hardly any of the London surgeons have tried acupressure. At a meeting of the London Medical Society in November last, only Mr. Bryant had tried it, and his success had not been encouraging. Mr. Tait says :]

I have not used a ligature since 1860, I never carry them, and I cannot imagine any case in which the ligature would be required to supersede an acupressure needle. There never was any rational doubt "of the capability of acupressure to arrest hemorrhage" in the minds of those who had seen it fairly tried. Again, it requires no particular manipulative skill in its application—much less, indeed, than does the ligature; and this idea, which has been extensively promulgated by the objectors to acupressure, has, I believe, done more harm by hindrance to its adoption than any other. I have had but a very slight experience of the ligature in my own hands; but I can affirm that it does not take me one-half of the time to secure the vessels of a stump by acupressure that I see others take to do the same with the ligature.

The other day, in a case of primary amputation below the knee, the time which I took to complete the operation, including the insertion of stitches, was observed by a bystander to be a

few seconds under three minutes, and that without the presence of any trained assistant. There were four vessels to secure. I obviated the difficulty often experienced in this operation from the retraction of the posterior tibial, by the simple expedient of dividing the interosseous structures low down, immediately after the completion of the flaps, so that when the bones were divided the vessels had not retracted above the saw-cut. The needle securing the posterior tibial was marked. The patient was the victim of a railway accident, and, as the only available medical aid on the spot was unavailing to check the hemorrhage, and I had a long distance to go to him, he had lost a large quantity of blood before the operation. During the consequent delirium, about twelve hours after the operation, which was performed during shock, the marked needle was dragged out of its position by some unguarded corner of blanket. Not a drop of blood followed—indeed, the attendants did not think it worth their while to awaken me on its account.

Eighteen hours after the operation I put the patient in a carriage and conveyed him a distance of twenty-two miles, to be within easy access of efficient medical attendance. I had the stump on my knee throughout the journey, and although I felt rather uncomfortable when I observed reaction set in, yet I had sufficient confidence to deter me from any unnecessary interference. The result was that on the thirteenth day the stump was completely united by first intention, save at the inner corner of the wound, where a few shreds of inter-muscular septa were sloughing. Not a drop of blood was lost at any time after the operation.

On the twentieth day he shivered, and rapidly became pyæmic, and died with symptoms of abscess in the left hemisphere of the brain.

On examining the stump it was found that the union had for the greater part been undone, but that what still remained was very firm. All the vessels were closed in a thoroughly efficient manner. The ends of the bones were covered with firm, healthy granulations.

I do not record this case with any intention of recommending that any needle should be removed so early as the twelfth hour. Besides being quite unnecessary, such practice would in many cases be very unsafe; but it shows how very little is really required to close a vessel. During the past few months I have had several serious operations, requiring the use of acupressure, and in all I have found it quite successful.—*Medical Times and Gazette, March* 30, 1867, *p.* 332.

46.—ON ACUPRESSURE AS APPLIED TO "STREET SURGERY."

By Dr. James Dunlop, Glasgow.

[Dr. Dunlop is police-surgeon to Glasgow, south of the Clyde, and has from this appointment as much minor surgery as occurs at a small hospital. During three years he has had 404 cases of wounds or other injuries. One of his chief annoyances for many years has been the necessity of dressing wounds over again, owing to secondary hemorrhage occurring. He says:]

During the last three or four years I have been using the needles, in all kinds of wounds, I do not remember a single instance in which I have been sent for to re-dress a wound in which bleeding had returned. No matter how excited and how violent the patient may be in his cell, he never yet has succeeded in removing the needles, or unloosing the threads which were around them. I am thus saved a great deal of time and labour, for which I feel duly thankful to Sir J. Y. Simpson. There is, besides, no shaving of scalp required, for there is no need of a smooth surface, as no plaster is applied to keep the edges of the wound together.

Such a wound on the scalp as I have described is now managed thus. The clots which have burrowed under the scalp are first turned out, and the wound then thoroughly washed; the blood is washed out of the hair, and the full extent of the injury is then in view. Having removed any dirt or hairs which may be adherent to the wound, a glover's needle, of a size a little larger than the extent of the wound, is applied in the following manner. In order to make the matter quite clear, it may be well to divide the procedure into three steps. In the first, the needle is taken and made to penetrate the skin at a point on a level with the lower angle of the wound, and almost a quarter of an inch from the edge of one lip of the wound. The needle is then pushed along the under or raw surface of the lip, till the upper angle is reached, when the point of the needle is made to appear through the skin at the proper level and distance from the raw edge. This step is the first method of Simpson.

In the second step, an ordinary linen thread is taken, and a few turns of it, in figure of 8, from eye end to point, are made round the needle. All the bleeding vessels, veins, and arteries along the one side of the wound are compressed by the needle against the tissues and the thread above. A second needle, similar to the first, is applied along the other lip of the wound, and a thread in figure of 8 around it. This second needle and thread compresses all the bleeding vessels on the other lip of the wound. In the third step, the edges of the wound, from which there is now no bleeding, are brought together, and kept in apposition, by a few turns of thread, from the eye end of the one needle

on the one side to the point of the other needle on the other side, and *vice versa*. The hair is then brought over the wound, and the dressing is complete, and no risk whatever is run of any further bleeding from the wound. On the following morning, ten or twelve hours afterwards, the needles are removed, and the thread left as a covering to the wound, which heals up, with or without the formation of pus, according to the amount of bruising or tearing of the part.

I prefer thread to wire in scalp wounds, as it is cheaper, more easily handled, and when the needles are removed it serves as a dressing by scab to the wound.

It may be mentioned that it is sometimes difficult to take out the needle, and that a forceps may be required if the scalp is thick and tough. If, however, the needle is left in the scalp for twenty-four or thirty-six hours, the difficulty is greatly diminished, and, if left long enough, the needle will come out of itself. As in most scalp wounds from falls there is considerable bruising and tearing of the skin, healing by first intention, without pus, is not very common; but in clean cut wounds, in which the bleeding has been arrested by needles, and the edges kept in apposition, as above described, immediate union, as a rule, takes place. And the presence of a needle in the wound, from the short time it is allowed to remain, does not become a source of local irritation, or an impediment to the healing process.

All scalp wounds, in which bleeding is at all profuse, and when, from the condition of the patient, any more simple treatment, as knotting the air over the wound, would be equivalent to doing nothing at all, are now treated by me in their first stage with needles. I have sometimes used two or three dozen of needles in a week, and have never yet seen any erysipelas or other bad effects from transfixing wounds of the scalp with them.

Wounds in the face or forehead from blows or falls are of frequent occurrence. Sometimes they are large and gaping, and over the eye-brow, or upon the prominence of the forehead. When in the latter position, and the bleeding profuse, I have in many instances passed a needle under the temporal artery at a little distance from the wound (Simpson's first method), and with a few turns of thread from point to eye end of needle, compressed the artery and at once arrested the bleeding. The wound was then dressed with a few strips of adhesive or isinglass plaster. After eight or twelve hours the needle was removed —no bleeding recurred, and no mark was usually left by the needle, and often little by the wound.

As an illustration of the value of acupressure in wounds about the forehead, the following case may be quoted :—

An old man, a weaver by trade, came into the city from the country, a distance of eight or nine miles. While in town he became intoxicated, and, as he was proceeding homewards, he fell out of the cart, in which he had been getting a friendly drive. When taken to the waiting room of the police chambers he was found to have a large wound over the left temple, from which the bleeding had been so very profuse that the old man became weak and faint, and had to be laid upon his back.

The wound was dressed with plaster, and with a compress over it. The bleeding appeared to be checked. But, after a little time, he rallied from his fainting state, and the wound began to bleed afresh. As the cart was waiting to convey the man away, a needle was introduced under the temporal artery, at a distance from the wound, and a thread passed round it. The bleeding was at once arrested. The man was thereafter assisted into the cart, and the driver received instructions that, on his arrival home, the doctor was to be sent for, and the needle removed. Without the needle, to command the bleeding from the divided artery, I would not have permitted the removal of the old man, as, in his intoxicated condition, weak from blood already lost, any further bleeding, occurring while in the cart and at a distance from home, might have been attended with fatal results. With the temporal compressed between the needle and thread, there was not the slightest risk of further hemorrhage, and the vessel was more secure than if the finger of the surgeon had accompanied the patient.

On two occasions I have had to pass a needle under the facial artery as it crosses over the lower jaw, to arrest troublesome bleeding, in deep gashes in the cheek, inflicted in one instance, in the case of a sailor, by a blow with a broken bottle; in the other by a fall from the top of an omnibus among street rubbish.

In the former the needle was removed after the lapse of four hours, and the wound which was dressed with plaster, healed up very nicely, leaving little mark. In the latter, though the bleeding was satisfactorily arrested by the needle which was removed twelve hours afterwards, from the amount and depth of the laceration of the tissues, the wound only healed up after considerable suppuration.

In the great majority of wounds on eyebrows, forehead, or chin, from which there is little bleeding, a fine needle passed from one edge of the wound to the other, as in the "Hare-lip operation," only obliquely instead of straight across, and with a few turns of thread from eye end to point, the bleeding is arrested, and the edges of the wound are kept in nice apposition without the intervention of plaster or any other dressing. In cases of wounds on the face or forehead, in boys or girls, in whom it is of the utmost importance that no mark be left, the

keeping of the edges in apposition in the manner just described will be found to give more satisfactory results than when they are treated with wire sutures or thread stitches.

In one case only have I had occasion to arrest bleeding by acupressure in a wound of the abdomen. This case was that of a lad who had been stabbed in the lower part of the belly in a scuffle. The knife had divided the epigastric artery, and the bleeding from the wound was profuse. A needle was passed into the wound, under what was thought might be the bleeding vessel, the point being brought up through the skin and the inner side of the artery. A few turns of the thread compressed all the tissues between the needle and the skin, and the bleeding was immediately arrested. Next morning the needle was removed, the bleeding did not return, and the wound did not heal by first intention, but in the usual way that stabs with blunt knives in the abdomen usually do.

Two more illustrations of the application of the needle in arresting hemorrhage may be given. There was the case of an old woman who pushed her left hand through a pane of glass, inflicting a wound in the wrist about an inch and a half above the root of the thumb, which divided the radial artery completely. A needle was inserted under the vessel, immediately above the wound, and a thread passed round from point to eye end, in figure of 8 form. The edges of the wound were brought together, and a compress and roller applied. Next morning the needle was removed, but the pad was not touched for several days. When it was removed the wound was whole.

The other illustration which may be given was the case of a child about ten days old, from whose umbilicus there occurred bleeding which resisted the application of caustic, a graduated compress and roller, and was only arrested after a needle was made to transfix the vessels and skin around the navel, and a ligature applied under the needle. This method, however, of treating bleeding at the umbilicus of a child, is one with which surgeons have long been familiar, and is the same in principle as the plan adopted in keeping a ligature on a vessel where the tissues are soft and the thread will not hold.

The only mishap which has occurred in my experience from the application of needles in wounds presented itself about six months ago, in the form of a traumatic aneurism, the vessel having been injured in the passage of the needle. The case was that of an elderly man, who fell down a stair, inflicting a deep gash on the back of the head, from which there was profuse bleeding. Needles were applied to the edges of the wound, which arrested the bleeding, and thereafter water dressings. Two days after the accident the needles were removed, and in ten days the wound was nearly whole, except at the upper angle,

where there was observed a small pulsating swelling, half the size of a walnut. To show this swelling the man had returned to town. During the healing up of the wound, he stated, that at times it often "took a bleeding," and that he had to get his head tightly bandaged before the flow could be arrested. As this pulsating tumour was upon one of the posterior occipital arteries, a needle was passed readily under the vessel, about an inch from the tumour. and a thread turned in figure of 8 form from point to eye. In two days the tumour had disappeared, and did not return when the needle was removed. In a few days more the wound was entirely whole.

In conclusion, I would recommend surgeons who have opportunities of treating superficial wounds, to give a trial to Simpson's acupressure, as I feel assured that it is not only the most simple and expeditious, but the most effectual method of arresting bleeding, and of putting wounds into the best position for healing that we have. For wounds of the scalp, or where the skin is tough, a spear-pointed glover's needle is better than the pin with the glass head, recommended to be employed in major operations: for unless the pin is retained for twenty-four or thirty hours, the forceps will be required to withdraw it, and the glass head, instead of an improvement, would be found a disadvantage. On the removal of the needle the thread is to be left to form a scab, and if there is a probability of suppuration ensuing in the wound, the thread may be wet repeatedly with a mixture of carbolic acid and glycerine, as practised in the Infirmary by Professor Lister, in the conversion of compound fractures into simple ones by the exclusion of the air, by the prevention of the formation of pus, and by the promotion of union of the lips of the wound by first intention. —*Glasgow Medical Journal*, *April* 1867, *p.* 476.

47.—ON A CASE OF POPLITEAL ANEURISM TREATED BY TEMPORARY METALLIC COMPRESSION OF THE FEMORAL ARTERY.

By T. Pridgin Teale, Jun., Esq., M.A., Oxon.

[The treatment of the following case was suggested by a case of carotid aneurism successfully treated by Mr. John Dix, of Hull. (see Med. Times and Gazette, Dec. 30, 1865, p. 717.) In Mr. Dix's case a temporary wire compress was applied, and withdrawn on the sixth day, as soon as the aneurism had become solid, and all pulsation ceased.]

Frederick W., a collier, aged 34, was admitted into the Leeds Infirmary on December 29th, 1865. In the right ham there was a pulsating tumour, of the size of a small orange, very soft

(especially on the inner side), and without any evidence of consolidation of its contents. He suffered also from severe neuralgic pains in the leg. He first noticed the tumour two weeks before admission, but he had been for three months laid up with rheumatism, brought on by working a whole day in wet clothes. The rheumatism affected all his joints, and had disabled him during the whole three months, with the exception of one week. The only history of accident was, that four years ago he fell down a cellar when drunk and sprained the right knee, returning to his work in a fortnight, not any worse for the accident.

Treatment by Flexion.—Dec. 30th. The ankle was firmly bound to the thigh until the pulsation in the tumour became almost imperceptible. During the rest of the day the neuralgic pains in the leg were considerably relieved.

Jan. 2nd, 1866 (fourth day of flexion). The leg was unbound, in order to ascertain whether any improvement was taking place in the aneurism, and to relieve him from the discomfort of the constrained position. There was no sign of consolidation. Flexion was resumed in the evening.

4th (sixth day.) Treatment by flexion was abandoned, as there was no appearance of improvement, and the circumference of the knee had increased from 16⅜ in. to 16⅞ in. The pulsation was quite as distinct as before the employment of flexion.

Treatment by Wire-compress (First period.)—Jan. 4th. The femoral artery having been reached in the usual way at the apex of Scarpa's triangle, a silver wire was passed behind the vessel, instead of the ordinary ligature of silk or hemp. Each end of the wire was then threaded on a needle, and by this means carried obliquely outwards through the sartorius until it was brought out through the skin at the distance of an inch and a half from the wound. The two ends of the wire, being about one-third of an inch apart, were then tied over a small piece of cork, and were tightened so as to compress the artery and stop the pulsation of the aneurism. Thus the wire formed a bridle passing from the skin round the artery, which could be made tight or slack at pleasure, and could eventually be withdrawn when no longer needed for compressing the artery. The pulsation of the aneurism having been completely arrested, the wire was fixed over the cork, and the wound was closed by wire sutures. The operation was followed by great diminution of the neuralgia of the leg.

Second day. Slight pulsation in the aneurism.

Third day. Pulsation arrested by the insertion of a small wedge between the wire and the cork, as practised by Mr. Dix in his case.

Fifth day. Slight pulsation, arrested by additional wedges. Circumference reduced from 16⅞ in. (day of operation) to 16⅜ in. No consolidation.

Sixth day. Pulsation of tumour doubtful.

Eighth day. The wedges were removed, and the wire untied, so as to take off all compression of the artery.

At this period he had become restless and feverish, and appeared distressed by the pressure of the cork upon the skin; so that, although there was a faint pulsation in the tumour, I felt compelled to give him at least temporary relief from the pressure. The wound by which the artery had been reached had healed by first intention.

Treatment by Wire-compress (Second period.)—Tenth day. He was much relieved by the remission of the compression for forty-eight hours, being less feverish and restless. The pulsation in the tumour, however, returned, and was increasing, though it had not become so great as before the compression was commenced. To enable him to bear the pressure upon the skin, which when concentrated upon the small piece of cork had much distressed him, I fastened the wire round a piece of splint, 5 inches by 1 inch, in order to distribute more extensively the pressure over the skin. This change answered perfectly. Especial care was taken to arrest the flow of blood through the artery completely.

Eleventh day. Suspicion of a thrill in the tumour. Wedge added. He bears the diffused pressure of the splint without discomfort, and is improving in condition.

Thirteenth day. Slight thrill. Second wedge added.

Fourteenth day. Wedges removed, so as to relax the compression.

Period after Removal of the Wire-compress.—Fifteenth day. Wire untied. Circumference of knee reduced from 16⅛ in. on the day of operation to 16 in. Pulsation not perceptible. Tumour rather more solid.

Sixteenth day. No pulsation. Wire withdrawn.

Eighteenth day. Solidity of tumour more decided; circumference reduced to 15¾ in. Pulsation of femoral ceases at the origin of the profunda, 1½ in. above the place of incision. There is a red blush round the openings whence the wire compress and the wire sutures have been removed.

Twenty-second day. Rigors; intense headache; feverishness.

Twenty-third day. Erysipelatous blush about the newly-united wound and the wire openings.

Twenty-eighth day. Erysipelas has spread down the thigh and half-way down the leg.

Fifth week. Œdema of leg and foot. He is very ill. Large abscess forming in the calf

Sixth week. Repeated rigors. Abscess opened. More abscesses about the knee.

Seventh week. Hemorrhage from calf.

Eighth week. Hemorrhage.

Eleventh week (from commencement).—Death.

Examination after Death.—The wound leading to the artery was perfectly healed. The femoral artery at the seat of compression was cut through, the divided ends not being retracted, but held together by their adhesions to the sheath, which appeared to bridge over and render secure the short interval. The artery above the point of division was much reduced in size, and did not contain any plug of lymph; below this point it was narrower, and plugged by a long clot. The divided ends of the artery were perfectly closed. The femoral vein below the seat of operation was filled by a recent clot, not adherent. The abscesses in the calf communicated with the cavity of the aneurism, which had evidently become diffused. This probably explains the repeated hemorrhages from the abscesses in the calf.

Conclusions.—1. That in cases in which arrest of the arterial current produces rapid consolidation of the aneurism, and the wire can be withdrawn in from three to five or six days, this method of Mr. Dix is superior to ligature.

2. That in cases in which consolidation is deferred, and the compression has to be continued beyond five or six days, the wire will cut through the artery equally with the ordinary ligature, the same protective changes taking place in the divided ends of the vessel. In such cases this method is neither inferior nor superior to ligature, as far as artery and aneurism are concerned.

3. That in using the wire compress, in aneurism of the extremities, all circulation through the aneurism ought to be cut off from the first.

4. That it is a question, to be settled by further experience, how far the concentrated compression by the cork on the skin is injurious, by distressing the patient and inducing a feverish condition, interrupting thereby healthy plastic processes, and predisposing the patient to erysipelas and pyæmia.

5. That in any future case I should diffuse the counter-pressure over as large a surface of skin as possible, to enable the patient to bear it without discomfort.

In the first period of the treatment by compression I was less careful to arrest entirely the pulsation of the aneurism under the impression that a feeble current favoured the deposition of fibrin on the walls of the cavity. The question forces itself upon me whether this patient might not have recovered under the usual method of ligature. Harm, I think, was done in two

ways. First, the week spent in trying flexion, not only lost valuable time, but gave rise to discomfort and a slightly febrile condition, which was unfavourable for after treatment. Secondly, I cannot but think that the painful, long-continued pressure upon the small area of skin contributed in some measure to the attack of erysipelas. These two disadvantages apart, and they can be avoided in future, I believe that a patient treated by the wire compress, if consolidation of the aneurism be delayed, is still in no worse condition than one who has undergone ligature of the artery; but if consolidation follows rapidly after the application of the compress, that he is safe from all the dangers which accompany the slow separation of the ligature.—*Lancet, Jan.* 5, 1867, *p.* 3.

48.—NOVEL METHOD OF DEALING WITH LIGATURES APPLIED TO ARTERIES.

Mr. Campbell De Morgan has been adopting of late, at the Middlesex Hospital, a plan of dealing with ligatures applied to vessels during a cutting operation, which merits notice. When the vessels have been tied, instead of following the usual custom and leaving the ligatures hanging out of the wound, Mr. De Morgan, by means of a needle, passes them through the skin close to where they are tied. They remain quite quiet and come away without the slightest pain or trouble when their work is done. The wound consequently has nothing to irritate it, and enjoys every opportunity of healing by the first intention. The plan leaves the parts as quiet as if acupressure had been applied. There is now in the hospital a case in which Mr. Moore tried the method at Mr. De Morgan's suggestion, on Wednesday week, after removing a breast.—*Lancet, Jan.* 19, 1867, *p.* 82.

49.—TRAUMATIC ANEURISM OF THE PALM CURED BY COMPRESSION.

Under the care of Sidney Jones, Esq., St. Thomas's Hospital.

[The following case furnishes a good example of success attending carefully-managed compression in the treatment of traumatic aneurism.]

Rebecca L., aged 29, married, was admitted into the hospital on the 21st of June, 1866. On the 19th of the previous May, whilst opening a window, the sash of which gave way, she received a glass wound just below the front of the base of the right radius. The wound in the skin was transverse, and about three-quarters of an inch in extent. From it the patient herself

drew a narrow-pointed blade of glass, which had passed obliquely for a distance of nearly two inches towards the inner side of the palm. It had apparently gone through the annular ligament, and had wounded the dorsal side of the ulnar artery in its course to form the superficial palmar arch. At the time there was very extensive hemorrhage, at first controlled with difficulty, but subsequently completely so by a pad firmly applied over the wound and forced flexion of the forearm. The wound was completely healed in about ten days. Mr. Sidney Jones saw her on the 18th of June, four weeks after the injury. There was then a scar, three-quarters of an inch in extent, above the wrist. On the outer side of the ball of the little finger there was a pulsating swelling about the size of a large walnut. The skin was thin, and the surface red and shining. Much pain was complained of in the palm, and along the ring and little fingers. The movement of these fingers was also much impaired. On pressure the sac was readily emptied; and the thumb might be passed without difficulty deeply into the palm and beneath the annular ligament. Pressure on the ulnar above the wrist diminished, but did not completely control, the pulsation; when combined with pressure on the radial, all pulsation was arrested. Pressure on the brachial likewise arrested all pulsation. Forced flexion of the elbow did not seem to have sufficient control over the pulsation to induce one to trust to this treatment alone.

By means of a tourniquet light pressure was kept on the brachial. A bandage was applied from the hand upwards, and cork pads were placed upon the radial and ulnar above the wrist. At the same time the forearm was flexed. At first, on account of the tension and redness of the skin over the aneurism, it was thought unadvisable to use any pressure in the palm; but subsequently, when the redness had subsided, and the sac had become somewhat consolidated, a cork pad was placed also over the site of the aneurism.

Two days after her admission the treatment was interfered with, in consequence of her having to leave the hospital on account of the death of her husband. She returned on the 29th of June, and treatment was resumed on the 30th.

July 7th. No pulsation to be felt in the sac on removal of all pressure; sac consolidated and much diminished in size; slight œdema of hand. The tourniquet was then discontinued, but pads were kept on the radial and ulnar, as well as over the sac.

Pulsation did not return during her stay in the hospital, which she left on July 13th. About a fortnight afterwards, a slight return of pulsation occurred from use of the hand, but soon disappeared. To continue the pads until all the palmar

swelling has subsided, and to keep the arm completely at rest. The bandage was worn until November.

Jan. 8th, 1867. No trace of aneurism to be discovered; the movements of the fingers not in the least degree impaired.—*Lancet, Jan.* 26, 1867, *p.* 116.

50.—NEW OPERATION FOR CURE OF VARICOSE VEINS.

Case under the care of JOHN WOOD, Esq., at King's College Hospital.

A man was operated on for varicose veins of the right leg, by Mr. Wood, by a new method, which consists in including the dilated vein between a needle in front and a double metallic wire behind. The needle and wire are introduced through the same openings, the latter first, and it is twisted as tightly as possible round the two projecting ends of the needle. Within two or three days, the wire works its way through the vessel. If by that time it have not done so through a piece of fascia intervening, it may be untwisted and tightened again. In this instance the vein was operated on in two different places, at an interval of about an inch. Mr. Wood stated that all the cases which he had treated by this method had done well; he had never had to deal with troublesome sores, and in one case only had there been a small abscess in a man in a low state of health; while he considered that it was a great point in favour of his mode of operating that it was not attended with any risk of hemorrhage, an accident which he has known to occur after Mr. Lee's operation for varicose veins, in which the vein is divided between two ligatures. He added, however, that where there was a mass of dilated veins, as in the scrotum for instance, Mr. Lee's method was preferable to his own.—*British Medical Journal, Jan.* 19, 1867, *p.* 55.

ALIMENTARY CANAL.

51.—STRANGULATED CONGENITAL INGUINAL HERNIA.

Case under the care of PRESCOTT HEWETT, Esq., at St. George's Hospital.

The interest of the following case lies especially in the anatomical formation of the hernia. It was a good example of rupture into the vaginal process of the peritoneum—a form which it is important to distinguish from the ordinary kind of inguino-scrotal hernia. As will be seen, the occurrence of the hernia was characteristically sudden. A young man, previously

healthy, finds after exertion a tumour in his scrotum. There is no gradual process of development, such as is observed in the ordinary inguino-scrotal rupture.

Mr. Birkett, in the article "Hernia" (Holmes's System of Surgery), remarks of these cases that the "tumour projects in a remarkable manner from the external outlet of the inguinal canal: directly the rupture escapes from the embrace of the external abdominal ring, the form is more globular and rounded in comparison with the pyriform outline of the hernia of slow formation in adult life." In the case before us Mr. Hewett lost no time in operating. He remarked that in these instances the stricture is so tight that severe mischief is occasioned with more than usual rapidity, unless the gut be quickly liberated. It is worth noticing, that the taxis is much less frequently successful in these cases than in the ordinary inguino-scrotal hernia in which the sac is slowly formed. Mr. Birkett shows that of 57 cases collected at Guy's Hospital in which a cutting operation was required to liberate a strangulated hernia, 33 belonged to the class of which we are writing, and 24 were of the old slowly-forming variety. Again: of 129 cases of oblique inguinal hernia, 59 had traversed the canal of the vaginal process of the peritoneum, and 70 belonged to the old inguino-scrotal variety. Of the former kind, 33 per cent. required a cutting operation; of the latter, but 24 per cent.—*Lancet, Dec.* 1, 1866, *p.* 604.

ORGANS OF URINE AND GENERATION.

52.—THE PROOFS THAT LITHOTRITY IS AN EMINENTLY SUCCESSFUL OPERATION.

By Henry Thompson, Esq., Surgeon Extraordinary to H.M. the King of the Belgians, and Surgeon to University College Hospital.

In the Lancet of Feb. 17th, 1866, and of Feb. 25th, 1865, I published as proof of the capabilities of lithotrity a statement of every case in which I had crushed a stone during the years 1864 and 1865, amounting in number to forty-three. I now present another year's entire experience of lithotrity—viz., that of 1866, amounting to twenty-seven cases more; and I venture to assert that this series of seventy consecutive cases completely supports the proposition placed at the head of this paper. I shall briefly report each one of these cases, and follow the system previously adopted, of naming at least one individual whose name is known, and who has seen the case as well as myself.

Case 1.—A gentleman aged 69. Very large phosphatic stone. Eight sittings: Dec. 1865, Jan. 1866. Perfectly successful. Seen with me by Mr. W. Morris, of Petworth.

Case 2.—A gentleman aged 56. Two rather small uric-acid stones. Five sittings: Dec. 1865, Jan. 1866. Perfectly successful. Seen also by his medical man, Mr. W. Morris.

Case 3.—A gentleman aged 65. Several hard phosphatic stones; severe disease of bladder. Five sittings: Jan. 1866. Perfectly successful. Seen with me by Mr. M. Foster, of Huntingdon.

Case 4.—A gentleman aged 53. Stones uric-acid and phosphatic mixed. Eight sittings. Disease of bladder, and tendency to produce phosphatic matter subsequently for some months. Finally cured, and now in a state of comfort. Jan. and Feb. 1866. Sent to me by the late Dr. Brinton, and known to Dr. Phillips, of Coventry.

Case 5.—A gentleman aged 67. Rather small uric-acid stone. Three sittings: Jan. 1866. Perfectly successful. Known to Mr. C. S. Webber. At this and all the foregoing cases Dr. Mazanowski, of St. Petersburg, was also present.

Case 6.—A gentleman aged 67. Large medium-size uric-acid stone. Nine sittings: January and February, 1866. Perfectly successful. This case was seen with me throughout by Mr. John Foster, of Upper Wimpole-street.

Case 7.—A gentleman aged 66. Small uric-acid stone. Two sittings: January, 1866. Extreme fever following, from which he made a perfect recovery. He was seen throughout by his medical attendant, Dr. Monckton, of Maidstone.

Case 8.—A gentleman aged 72. Large phosphatic stone. Six sittings: February, 1866. Perfectly successful. Seen with me by Mr. Charles Butler, of Ingatestone.

Case 9.—A gentleman aged 63. Medium-sized uric-acid stone. Five sittings: February, 1866. Perfectly successful. Seen by Dr. Charles Mayo and Dr. Taylor, of Guildford.

Case 10.—A gentleman aged 69, with very advanced disease of the bladder and enormously enlarged prostate; but he was suffering so severely from several hard phosphatic stones, and with exhaustion therefrom, that I could not decline to make an attempt to remove them, notwithstanding his very unpromising condition. He gradually sank from debility. Seen throughout by Mr. W. S. Foster, of Newport.

Case 11.—A gentleman aged 74. Large uric-acid calculus. Six sittings, chiefly under the influence of chloroform, and much débris removed: March, 1866. Perfectly successful. Has hunted regularly this present season. He was seen by Mr. Clover, who gave chloroform several times.

Case 12.—A gentleman aged 56. Rather small uric-acid stone. Four sittings: March and April, 1866. Perfectly successful. Attended throughout by Mr. John Foster, of Upper Wimpole-street.

Case 13.—A gentleman aged 70. Several uric-acid stones. Six sittings: March and April, 1866. Perfectly successful. Seen with me by Dr. Radcliffe.

Case 14.—A gentleman aged 48. Phosphatic stone. Four sittings: March and April, 1866. Perfectly successful. The patient was seen with me by Dr. Hudson, of Cork-street.

Case 15.—A gentleman aged 67.—Rather small uric-acid calculus. Four sittings: April, 1866. Perfectly successful. Seen with me by Dr. Owen Rees.

Case 16.—T. H., aged 49. University College Hospital. Two rather large uric-acid stones. Eight sittings: May and June, 1866. Perfectly successful.

Case 17.—D. E., aged 39. University College Hospital. A large uric-acid stone. Seven sittings: June and July, 1866. Perfectly successful.

Case 18.—A gentleman aged 73, with a very large and hard uric-acid stone. He was very much averse to lithotomy, which would perhaps have been the better operation for him, and I consented to crush the stone. It turned out to be even a little larger than I anticipated. It was entirely removed in several sittings, but he succumbed to fever and exhaustion. June and July, 1866.

Case 19.—A gentleman aged 67. A medium-sized phosphatic stone. Renal disease existed; œdema of the legs; and advanced disease of the bladder. There was complete phimosis. The urethra was blocked with phosphatic débris, and the urine dribbled off involuntarily. I operated first on the urethra, and cleared it; then crushed the stone, in five sittings, with perfect success. All his other symptoms have been greatly relieved since, and he has no trouble whatever now with the bladder or urethra. May and June, 1866. Seen with me by Mr. P. C. Chadwick, of Wrington.

Case 20.—A gentleman aged 70. Five or six small uric-acid stones. Six sittings: June and July, 1866. Perfectly successful. Mr. Swain, of Devonport, was present at one sitting.

Case 21.—A gentleman aged 55. Medium-sized hard phosphatic stone. Five sittings: July, 1866. Perfectly successful. Attended throughout by Mr. John Foster, of Upper Wimpole-street.

Case 22.—W. M., aged 40. University College Hospital. A man with advanced renal disease, whose symptoms were aggravated by the presence of two or three phosphatic calculi in the bladder. These were removed in three sittings, in July, 1866;

and he left the hospital with his bladder free from calculous matter, and was so far relieved. He fell a victim to the organic disease of the kidneys ultimately.

Case 23.—R. W., aged 52. University College Hospital. Enormously large and hard phosphatic stone. Fifteen sittings: Oct. and Nov., 1866. Perfectly successful. He had been the subject of lithotomy before.

Case 24.—A gentleman aged 76. Two uric-acid calculi of small medium size. Five sittings: Oct. and Nov., 1866. Perfectly successful. Was also under the care of Mr. Blaker, of Brighton.

Case 25.—R. E., aged 60. University College Hospital. Mixed uric acid and phosphates. Four sittings: Nov., 1866. Perfectly successful.

Case 26.—A gentleman aged 54. Medium-sized uric-acid stone. Five sittings: Nov. and Dec., 1866. Perfectly successful. Was also under the care of Dr. Lionel Beale.

Case 27.—A gentleman aged 75. Large uric-acid stone. Six sittings under chloroform: Dec., 1866. Perfectly successful. Was seen with me throughout by Dr. F. Davies, of Gower-street.

[The following is an analysis of twenty-seven cases of stone in the bladder operated upon by lithotrity during the year 1866.]

The oldest patient of the series had passed seventy-six years of age; the youngest was thirty-nine years; four only were below fifty years of age; thirteen had a mean age of more than seventy years; six were above seventy-two years of age. The mean age of the entire twenty-seven cases is upwards of sixty-two years.

Taking the seventy consecutive cases I have operated upon by lithotrity in three years, it is very remarkable that the same mean age held good for each year, and consequently remains the same for the total number—that is to say, the mean age of the seventy individuals so operated upon is a little more than sixty-two years.

There were two deaths in the past year; there were two in the preceding two years, making four altogether; and I reckoned among these, as one death, a case by no means necessarily resulting from lithotrity. The worst construction, then, is at once accepted in order to meet any suspicion of an endeavour to make the case for lithotrity better than the facts actually warrant. I must add, in fairness to this question and also to myself, that many of these patients were in circumstances of health which rendered interference very hazardous. The greatest care and very attentive watching were necessary to such patients, I have not selected cases; for, on the contrary, many of the worst and most difficult to deal with have been attracted

by the success of the operation, especially during the last year, which has furnished me with a class of patients much below the average in health and stamina.

In no case have I declined to employ lithotrity, unless an old and narrow stricture (in one case), or an exceedingly large and hard stone, has rendered crushing impossible.

Cases of atony of the bladder (erroneously called paralysis), of greatly hypertrophied prostate, and of chronic renal and vesical disease, were of frequent occurrence among the series. I suppose it would not be possible to colleet in three years seventy individuals of sixty-two years of age suffering from stone in the bladder without finding much chronic disease among them.

I have now, therefore, no hesitation in claiming to have established the following propositions :—

1. That lithotrity is capable of freeing elderly patients from stone at a very small risk, if well-constructed instruments, with delicate manipulation, be employed, and if watchful care be exercised in the management of the patient.

2. That the success of lithotomy has never been in any way comparable with that which I have been able to report as the result of the crushing operation.

Relative to the mode of operating I have little to add. The lithotrites employed have almost invariably been those made by Messrs. Weiss, and fitted therefore with their most ingenious mode of changing sliding into screw action, and *vice versâ ;* and also with the cylindrical handle designed by myself, which permits of the most delicate movement, as well as of the utmost solidity of grasp.

I have never once used a preliminary injection. Mr. Clover's instrument for removing fragments was employed occasionally, only where it seemed to be wanted ; by far the greater number of cases with me do not require it, but now and then it is very useful. I have never once used a syringe or any other apparatus for washing out to remove fragments.

Chloroform has been occasionally used—that is, in a very small minority of cases. There has been no instance of trouble with impacted fragments. Certainly on not more than two or three occasions have I found it necessary to use a pair of forceps to remove one.

I have particularly avoided the removal of any large fragment by the urethra. Nothing is easier, and, I may add, as a rule, more injurious. The lithotrite, at almost every sitting, contains between its blades a fragment which might be drawn through that canal. But it seems to me unwise to do this, when one turn of a screw pulverizes the fragment, and the débris comes away harmlessly enough by the natural powers of

the patient. And no benefit can accrue from the removal of fragments whole, as compared with their removal in powder.

It is certainly a safe and useful plan to instruct the patient to pass no water during the first twenty-four hours after a sitting, except in a recumbent position on his back. The urine flows off, leaving the larger fragments behind in the bladder. Subsequently the urethra becomes less sore; the fragments are more water worn, and therefore less sharp; and the passage and the fragments are better fitted for contact with each other during the expelling process than at first. I am persuaded that this is a useful practice, and I have pursued it now for some time; invariably after the first two or three sittings with a large and hard stone.—*Lancet, March* 16 *and* 23, 1867, *pp.* 330, 360.

53.—ON THE AFTER-TREATMENT OF LITHOTRITY.

By Dr. George H. Porter, Examiner in Surgery Royal College of Surgeons, Ireland.

[It is evident that as soon as a stone within the bladder has been reduced to fragments, it is most desirable that those fragments should be removed as soon as possible. This, if it can be accomplished without teasing the bladder much, must be a far preferable plan to leaving the fragments to be expelled by the unaided contractile force of the viscus. It is astonishing how small an amount of detritus is removed by the injection of a stream of water. The return current is generally very feeble, and especially if, as is often the case, the bladder is wanting in tone.]

It has always been a desideratum to supplement the force of the bladder in the removal of detritus. The late Sir Philip Crampton saw the necessity of some efficient means of doing so, and not only suggested but employed a most ingenious contrivance, which, in my student days, I saw him use in the Meath Hospital, and which is well described in the number of this journal for January, 1846, p. 22, in the following words:—"The apparatus consists of a strong glass vessel of an oval form, and six or eight inches in length, by three in diameter, and capable of holding about a pint and a-half of water; to this vessel is attached a tube of about half an inch bore, furnished with a stop-cock. The air being exhausted by means of an exhausting syringe, and one of Heurteloup's wide-eyed steel evacuating catheters being introduced into the bladder, it is next attached to the exhausted vessel; the stop-cock is then turned, and a communication being thus established between the bladder and the glass, the pressure of the atmosphere is by

this means brought to bear on the bladder, and supplies an expulsive power, which may be increased to any required amount."

The instrument of Mr. Clover, of London, for injection of the bladder, and withdrawal of the injected liquid by *suction*, is such an improvement upon the former means of removing debris by injection, that having found the advantages its employment affords in speedy and safe removal of the fragments of calculi, I consider its use an important auxiliary in the after-treatment of lithotrity. It must be admitted that there can be no more important element in the after-management of a case of lithotrity, or a point more conducive to the success of the operation, than early removal of the detritus, and without injury to the prostate or urethra; and improvements in the surgical appliances for lithotrity are to be much encouraged in this direction as well as in the means of primary comminution of the calculus. By crushing the stone, in the first instance, a comparatively smooth and single calculus is converted into several angular and irregular stones; the bladder, moreover, having become more or less irritated by instrumental interference, the patient is not much better off than he was before the operation. His hopes of relief, therefore, rather depend on the removal of the crushed fragments. Every practical lithotritist will bear me out in saying that the delight of a patient is most remarkable when he sees the fragments; and, on the contrary, his spirits are depressed when the debris is tardy in making its appearance. I have found the instrument devised by Mr. Clover (to whom the profession is also indebted for an apparatus for the safe administration of chloroform) most efficacious in removing any fragments sufficiently reduced in size to pass through the large catheter attached to his syringe.

[The following is Mr. Clover's own description of his instrument as given in a letter in the Lancet for May 12, 1866.]

"My instrument consists of a glass cylinder two inches long and two inches wide, having an eight-ounce India-rubber ball at one end, and a vulcanite mount at the other, in which is a hole which fits closely to a collar fixed just above the rings of the catheter, so as to allow the catheter to project three-quarters of an inch inside the glass vessel."

The instrument that I have been in the habit of using was procured for me from Weiss, of London, by Messrs. Fannin, of Grafton-street. It differs from, but possesses advantages over, that described by Mr. Clover, namely, the mount is of brass attached to the glass, and to it is *screwed* on the stopper, which has a tube, the calibre of a No. 12 catheter, fixed to it, and

extending into the cylinder about three-quarters of an inch. This arrangement renders it unnecessary for the catheter to project into the glass portion of the instrument, and allows the apparatus to be attached to, and detached from the catheter with greater ease.

It has been proposed by my friend Mr. Fleming to improve the instrument by adding an offset to the glass part, resembling that of the ordinary breast-pump—*vide* Dublin Quarterly Journal of Medical Science for February, 1866, and by Mr. Maunders—*vide* London Hospital Reports, Vol. iii., 1866, page 216. The late Sir Philip Crampton was not unmindful of this addition to his instrument, a glass receptacle being attached to the brass tube united to a copper cylinder, which he had constructed to bear greater exhaustion than the glass one. I confess that, although ingenious, I cannot see the advantages of such an offset to the glass portion of Mr. Clover's syringe. When the end of the catheter extends sufficiently into the cylinder it renders it most difficult, if not impossible, to force back any fragment that may have been sucked into the instrument. Indeed, in practice I have found that a good deal of debris remains in the India-rubber portion of the apparatus instead of the glass, and certainly if it ever passes beyond the projecting portion of the catheter into the glass it will be retained just as well as with the offset. To the practical surgeon I consider this instrument of Mr. Clover's a great boon, not only to remove detritus after lithotrity, for which he suggested it, but also for the removal of clots of blood from the bladder, as I myself lately found it most efficient in a case of bleeding into this organ, arising from diseased prostate. The catheter should be of the size of No. 12, with a large eye in the concavity of its curve, and provided with a stilette made of gum-elastic to fill this aperture during its introduction and withdrawal.

The fragments of the calculus removed by lithotrity in the first case were analyzed by my friend Dr. William Daniel Moore, who stated that it was composed of lithic acid. It is unusual, at an advanced period of life, to find a calculus wholly or so largely composed of lithic acid, although in some or other of its salts it is one of the most usual ingredients of all calculi. But while there is no age exempt from the occurrence of urinary concretions, into which lithic acid enters largely, they are, perhaps, more associated with the urinary diseases of earlier than of later life. With this form of calculus there are certain advantages in the performance of lithotrity; there is less apprehension of delay and tediousness in the secondary crushings, because the absence of phosphatic salts indicates an integrity of the mucous membrane of the bladder, and an acid rather than

an alkaline condition of the urine, both of which circumstances very much promote the success of any operation implicating the interior of the bladder. In cases where there is reason to believe lithic acid, or its salts, to be undergoing deposition in the bladder, it is dangerous to render the urine alkaline in the hopes of interrupting the formation of a calculus, on account of the tendency which the phosphates exhibit of forming in layers round lithic acid calculi. As soon as the urine is made alkaline, although the deposition of lithic acid may be checked, a layer of triple phosphate will replace it, and the calculus will increase in size as rapidly, if not more so, than before. In the after-treatment of cases of lithic acid calculus it is of importance to prevent a re-disposition in the bladder of this ingredient of the urinary excretion, which will be very liable to occur if the diathesis be not combated. With regard to the urine, it is not necessary to render it more than neutral, for which purpose the waters of Vichy and the carbonate of lithia are well adapted. It is to be borne in mind that should it be rendered alkaline the phosphates are ever ready to take advantage of a small hemp-seed or pin-head particle of gravel, and upon it, as a nucleus, to initiate a rapidly-growing stone. The object of keeping the urine neutral is to keep the lithic acid in a soluble condition until after its removal from the body. It is also most important to keep the action of the skin healthy, as it has been ascertained that the quantity of lithic acid in the urine is augmented when the cutaneous transpiration is interfered with. Warm clothing, the wearing of flannel or chamois leather next the skin, occasional diaphoretics, and the use of the vapour bath, are means of warding off the excessive formation and deposition of lithic acid concretions which will be worthy of attention after the removal of a calculus of this description. At the same time it will be necessary to endeavour to restore the proper tone of the organs of digestion, and to combat any peculiar form of dyspepsia which may be present, since the lithic acid diathesis is so much due to defective primary assimilation. —*Dublin Quarterly Journal, Feb.* 1867, *p.* 28.

54.—ON THE IMMEDIATE TREATMENT OF STRICTURE OF THE URETHRA.

By Barnard Holt, Esq., Senior-Surgeon to the Westminster Hospital.

[The following paper is intended to embrace the experience of Mr. Holt in the immediate treatment of stricture of the urethra during the last twelve months, selecting for description a few of the most interesting cases.]

During the past year I have operated on 114 cases without a single bad result of any kind whatsoever, and with only one complication (a small abscess of the penis), which arose in consequence of the density of the stricture breaking the directing rod of the instrument. The cases embrace every variety, and occurred in my private and hospital practice, in patients sent to me from all parts of the kingdom and abroad.

With the above exception of abscess of the penis, of which I will give short paticulars, every case has succeeded to my most entire satisfaction, and not more than twenty per cent. have even had a rigor, the remainder being so far well as to leave the house on the second day from the operation, when, if they had so desired, the majority could have resumed their ordinary occupation.

The first case I will record is that of an officer sent to me from India. After several attacks of gonorrhœa, which laid the foundation for stricture, he had infiltration of urine, followed by abscess of prostate. The infiltration gave rise to fistulous openings in the perineum and right buttock, and the abscess of the prostate burst into the rectum, establishing a recto-vesical fistula. Through each of these openings the urine flowed so much more freely than by the penis that he was always compelled to undress and sit on some vessel when he required to pass urine. His previous sufferings had seriously damaged his health, and when I first saw him he presented a most dejected aspect, being very much attenuated and hectic. The urine that passed per urethram only came guttatim, while that which escaped by the perineum and buttock came by a tolerable stream. Of course he had what he described as frequent diarrhœa, from the irritation caused by the urine in the rectum.

At my first examination I found it impossible to pass any instrument into the bladder; the small catheter that could be introduced through the strictures immediately entered the opening in the rectum, which was ascertained to be about half an inch in length, and the parts were so painful and irritable that it was impossible to proceed without resorting to chloroform. On a future day the patient was rendered insensible by chloroform, administered by Mr. Clover. After very considerable trouble, I passed the dilator into the bladder and split the strictures with the No. 12 tube, and, as there was so extensive a rent in the rectum, I deviated from my usual practice and retained a gum-elastic catheter in the bladder. The after-treatment was carried out in the ordinary way. The patient never had a bad symptom; the fistulous openings in the perineum and buttock rapidly closed; and at the present time he micturates with perfect ease, the rectal opening having so far closed

that only one or two drops escape. A No. 11 can be passed with great facililty.

The second case I shall refer to was even more complicated than the first, for no urine had been passed per urethram for nine months previous to my being consulted. The urethra at the bulb was entirely occluded, and all the urine escaped through a fistulous opening far back in the perineum. The bladder was never entirely relieved, and the urine was loaded with mucus and pus. The patient's health was so much damaged by the absorption of the fetid ammoniacal urine that it was with difficulty he could be removed to London. Previously to the administration of chloroform I made several attempts to introduce the finest catheter, without success; but eventually while under chloroform, I passed by force a No. 4 through the obstructing point, guiding it as nearly as I could along the urethra into the bladder; the dilator was then introduced, and the passage was at once enlarged with a No. 12 tube, a No. 12 gum-elastic catheter being afterwards retained. The patient suffered but little from the operation, and the urine flowed freely through the catheter; this was removed at intervals of five days, when another was substituted. His health rapidly improved; the urine lost its ammoniacal odour, and soon became perfectly clear; he was enabled to drive out; and his appetite, which had almost entirely failed him, returned, so that he could now take food freely. At the expiration of a month the catheter was removed, but the attempt to relieve the bladder in the ordinary manner failed, and only a very small quantity of urine could be passed. The catheter was replaced, and he daily improved in health. He was now taught to remove and re-introduce the catheter, which he accomplished with the greatest ease and without the slightest pain. He has continued this plan for the last six months; but although his life has been saved, he cannot do without the catheter, and I do not think he ever will. My belief is that the course of the urethra was not kept at the strictured part, but that a passage was forced by the side of the stricture, through which the catheter can be easily passed, but through which he has little power of micturating. It is just possible that in the course of time the new passage may become so patulous as to allow a small stream to be made.

The next two cases are recorded simply to prove the little danger that follows on the performance of the operation in difficult cases, although the patient may be far advanced in years.

A gentleman well known in London, aged seventy-two, consulted me for what he termed intractable stricture of the urethra, through which all the surgeons he had previously consulted

had failed to pass any instrument; and partly from the want of success, and partly from the pain he had undergone and the hemorrhage that ensued after every attempt at catheterism, he was very reluctant to permit any further examination. He informed me he had been the subject of stricture for more than thirty years; that his stream of urine had been gradually diminishing; that he was obliged to pass urine so frequently both during the day and the night that he was debarred from general society; and his health was materially damaged by want of rest and the absorption of the decomposed urine he had such difficulty in voiding, and which now only came by drops or continually leaked away, wetting his clothes, and rendering him a misery to himself. Upon a consultation, he was advised that as there was no probability of a catheter been passed, he had better abandon all instrumental interference, and be content to permit the urine to dribble into a urinal, which he was recommended to wear. I persuaded him to permit a further trial; and failing with a silver catheter, I bent a small gum-elastic one, and succeeded in passing it into the bladder. Regarding the experience of his former surgeons, I tied it in, and sent him at once to the Burlington Hotel. On the following day the catheter was removed, and I succeeded in passing the dilator, and split two strictures, afterwards introducing a No. 12 with great ease. This gentleman never had a single bad symptom of any kind whatsoever. He was up and in the coffee-room on the following day, and from that time there has not been the slightest difficulty in his passing the large instrument. He assures me he passes urine as well as he ever did, and that he does not suffer the least pain. His health is greatly improved and he can now accomplish more than he has done for many years.

The next case is so similar to the one already related that it would be a waste of valuable space to record the details.

A member of our profession, seventy-four years of age, a resident in Guernsey, who was to have consulted me last year, but was prevented by an attack of apoplexy, lately consulted me with as nearly as possible the same symptoms as were complained of in the above case. He had two strictures, which had hitherto resisted the passage of a catheter, and the urine was now passed guttatim. I fortunately, in his case, succeeded with a half No. 1, which was retained until a larger size could be passed. This in three days was so far accomplished as to enable me to pass the dilator, split the strictures, and afterwards introduce a No. 12 catheter. He never had a bad symptom of any kind whatsoever, and in ten days' time returned to Guernsey, passing his own instrument with perfect ease.

The following two cases are recorded to show the probability that epilepsy and stricture are occasionally associated, and that by relieving the stricture the fits may cease.

I was requested by my colleague, Dr. Radcliffe, to undertake a case of difficult stricture in an officer of artillery, who for some years had been subject to repeated epileptic seizures, the attacks having become more frequent prior to my seeing him. The patient was a tall, well-proportioned man, but who now presented a distressed and exhausted appearance, and who, from the complexity of his ailment, was then upon sick leave. Under Dr. Radcliffe's care he had materially improved; but the fits still recurred, and the difficulty in micturition was daily increasing. Upon my first two examinations I did not succeed in passing any instrument into his bladder; and, previous to the third attempt, he was seized with epilepsy while coming to my house, the fall causing a severe scalp wound, for which he was at once taken to the Charing-cross Hospital. The severity of the blow detained him for a day or two, when he returned under my care. A small gum-elastic catheter having been passed and retained, the dilator was subsequently resorted to, and the strictures were split with the No. 10 tube, the largest size his urethra would admit. For some days he was confined to the house from sickness and depression, but he never had another epileptic seizure; and although there was some difficulty in the after-treatment, occasioned by an enlarged prostate, yet he has always been enabled to pass his own instrument.

The second case was very similar; but with better results, so far as the size of the stream was concerned. This patient, who had frequent epileptic seizures prior to his operation, never had one afterwards, and has now gone abroad apparently perfectly well.

In the case that I alluded to where the directing rod of the instrument broke, the stricture was the densest I ever remember to have met with. It occurred in a gentleman residing in Devonshire, who had been long inconvenienced by all that attends a bad stricture. At my first visit I could pass a No. 3, but after every introduction he had retention of urine; and he only recovered from the irritation caused by the bougie when it was time for him to have it passed again. The dilator was first used without chloroform, but the density of the stricture was such as to require considerable force, and, the patient giving a sudden start, the directing rod broke; this gave rise to smart bleeding, which was arrested by the passage of a No. 3 catheter, introduced to prevent infiltration. On the following day I passed the dilator under chloroform, and with great difficulty thrust the tube between the blades; the stricture gave way with

an audible snap, and a No. 12 at once entered the bladder. As the urethra had been lacerated by the breaking of the rod, I tied in the No. 12; inflammation, however, supervened, and a small abscess formed in the spongy portion of the penis *three inches in front of the stricture;* this was opened, and the patient speedily recovered, when, having been taught to pass his own bougie, he returned to the country perfectly well. No infiltration of urine or other inconvenience resulted from the forcible rupture of the stricture.

It would be useless in the present communication to give any more cases in detail. As in my observations on the immediate treatment of stricture of the urethra are recorded all the varieties of stricture that are likely to be met with, I will only add that the experience of another year convinces me more than ever of the safety of the operation, and its applicability to all forms of stricture, and the permanency (where the after-treatment has been carried out) of its results. I again assert, that in all cases where the stricture *has been fairly split* the best known results are obtained, and I still entertain the strongest belief that this plan of treatment must supersede all others.

In the Lancet for June 16th, 1866, are some remarks by Mr. Henry Thompson "On the Treatment of Stricture of the Urethra by Over-Distension;" and the great point in Mr. Thompson's argument is, that by his instrument he is enabled to dilate the stricture to No. 16 or more, although the meatus will only admit a No. 12; and so he infers that a great advantage is obtained by dilating the stricture four sizes larger than the orifice of the urethra would admit. And this undoubtedly would be so if the dilatation could be maintained; but Mr. Thompson goes on to state, after the operation has been completed "a large gum catheter is passed, and tied in for twenty-four hours." "I pass no instrument for two days, then a full-sized bougie every day or two, prolonging the intervals, and teaching the patient to do it himself occasionally afterwards."

Now, the necessity for the introduction of a bougie proves one of two things: either that the stricture has never been dilated beyond the size the meatus will admit, or else that the dilatation to No. 16 cannot be maintained. If it could be maintained, Mr. Thompson would have no occasion to pass an instrument four sizes less than the one he has just dilated the stricture with; and if it cannot be maintained, then there is no advantage in having dilated a stricture to No. 16, which has to be kept open by a No. 12. Mr. Thompson further states, "*I distend as much as possible, and rupture as little as possible.*" Now as the benefit to be derived from this treatment is so entirely opposed to not only my experience, but the experience of a large number

of surgeons who adopt my operation, I cannot reconcile Mr. Thompson's results with my own.

During the past year I have had opportunities of seeing some of the patients whose cases are recorded in my book, and in only two instances has the stricture so recontracted as only to admit a bougie one size less than was attained at the operation. For example, where the patient after the operation could pass No. 12, he can now only pass No. 11, and this after the expiration of six years. In all the other cases that occurred in my private practice the patients have remained well, and the same instrument can be passed now that was passed at the time of the operation. In some of my hospital cases, however, the stricture has relapsed simply from the fact that the patients have permitted two, three, and four years to elapse without having any instrument passed. Of course, as I have previously stated in such cases, the stricture will recur, and unfortunately at the present time we do not know any method of treatment that will prevent it. There is, however, this remarkable fact, that if the stricture *has been fairly split*, although the after-treatment may have been neglected, yet it can be again immediately dilated to the full size by passing the large tube slowly between the blades of the instrument, and if ordinary care be now taken the full size can be maintained.

Does the same success attend the operation in other hands? My reply is that, with all intelligent surgeons, it does; but when surgeons will force a passage with *the dilator* in cases where they cannot introduce *a catheter*, or continue to dilate the stricture to Nos. 5 and 6 or more previous to using it, then unfavourable results must be met with. In the first there is no security that the dilator does not deviate from the urethra; and in the second the stricture is not split, but simply further dilated.

In conclusion, if surgeons will only exercise one caution, they need have no hesitation in performing the operation: pass a small gum catheter, retain it in the bladder for a few hours, and immediately on its withdrawal introduce the dilator; and, if this is kept in the urethra, there need not be the slightest hesitation in at once *rapidly* thrusting the chosen tube between the blades of the instrument. *I* am always certain the dilator is fairly in the bladder before I use the tube; but if this is not done the result must be a failure, for which I am in no manner responsible.—*Lancet, Dec.* 8, 1866, *p.* 631.

55.—OVER-DISTENTION AND RUPTURE OF THE URETHRA. By Henry Thompson, Esq.

A very few words will suffice in reply to Mr. Holt's argument respecting my method of treating stricture by over-distension.

Mr. Holt makes a theoretical objection to it because I pass a bougie after the operation; and draws the inference, for which there is not an iota of ground, that no benefit results from opening the stricture to the full size of the bulbous urethra—viz., about No. 16 or 18,—instead of stopping at No. 12, the size to which his method is limited. I pass a bougie after the operation *for the same reason* which leads Mr. Holt to pass a bougie after his operation; that is, because we know that without the subsequent use of the bougie no treatment whatever can be relied on as permanently useful. Since recontraction always takes place to a greater or smaller extent, I hold it rational to believe that it is better that such recontraction should commence from No. 16 than from No. 12, and my experience corroborates that belief.

Mr. Holt says, "the benefit to be derived from this treatment" (of mine) "is entirely opposed to not only my experience, but the experience of a large number of surgeons who adopt my operation." If Mr. Holt has tried it, he is entitled to say this; if he has not, I think he is not capable of judging. I have tried both methods many times, and have no hesitation in preferring over-distension for the majority of cases; while I should, and do, adopt (as I have before said) "rupture" for a much smaller number. It is only fair to add that my instrument is quite capable of producing rupture, if desired, when rapidly opened, and to a greater extent than by the other method.—*Lancet, Dec.* 15, 1866, *p.* 670.

56.—ATONY OF THE BLADDER FROM STRICTURE OF THE URETHRA.

Case under the care of T. B. Curling, Esq., at the London Hospital.

[The patient, who was 36 years of age, complained of being troubled with a constant dribbling of water. He had had stricture for some years, and about ten months before he had an attack of retention of urine. The bladder was relieved by catheterism and the stricture cured, but still the dribbling of urine continued. The bladder was emptied regularly with a catheter, and the patient put on good food and twenty drops of tincture of iron three times a-day. He was discharged cured.]

In the course of some clinical remarks on the above case, Mr. Curling said that its nature might easily be overlooked by those unaccustomed to treat diseases of the urinary organs. He then pointed out that the history of the case showed that the bladder

had been greatly over-distended in an attack of retention. After the urine has been thus retained the muscular coat of the bladder does not regain its contractile power, consequently the urine accumulates up to a certain amount, when distension of the neck of the bladder allows its escape, and the urine then goes on dribbling away, more or less in proportion to the quantity secreted. The fibres of the bladder are now unequal to the task of expelling its contents, especially through a strictured channel. They have been over-stretched and in this way have lost their tone. Even after drawing off the urine daily and thus preventing distension, it will be found that the expulsive power usually returns but very gradually, and sometimes not at all. In this case under treatment for sixteen days, the patient had regained the power of micturition. He could hold his water for two or three hours, and exercise sufficient expulsive power to void the whole of the urine in the bladder.

Mr. Curling then pointed out that this condition is not, as some might suppose, a paralysis of the bladder, but an atony, a loss of tone and power from over-distension. A similar state of things is sometimes met with in the rectum, as pointed out in the lecturer's work on diseases of that part, in which there is a chapter entitled "On Atony of the Rectum," where cases are described as loss of tonicity and defective muscular power in the lower bowel, preventing the proper extrusion of its contents.

Mr. Curling then went on to show how the atonic state of the bladder in this case, arising from over-distension, may be contrasted with a not uncommon condition, arising from some impediment to the escape of the urine. For example: a thickening of the bladder, chiefly owing to hypertrophy of its muscular coat; in their frequent efforts to overcome the obstruction, the muscular fibres acquire an abnormal development—the exact opposite to the state of the bladder seen in cases of atony. The treatment adopted in the case reported above was complete emptying of the bladder with the catheter once a-day. This process prevents too great accumulation of urine, enables the muscular fibres of the bladder to contract, and at the same time distends the strictured part of the urethra. To give strength and tone to his system he ordered the citrate of iron and strychnia. At a later period he substituted the muriated tincture of iron to improve the quality of the secretion.

The result was quite satisfactory, and the recovery of expulsory power more rapid and complete than usual.—*Medical Press and Circular, Jan.* 2, 1867, *p.* 10.

AFFECTIONS OF THE EYE AND EAR.

57.—ON EXTRACTION OF CATARACT.

By Prof. Von Graefe, Berlin.

[Professor Von Graefe states that from a personal experience of about 300 operations for cataract by his "Modified Linear Extraction" in 90 per cent. he has obtained a complete result, and in 82 per cent. the healing process was absolutely normal. In 10 per cent. of all the cases operated upon the results were unsatisfactory; but among these the majority were cases of imperfect success, admitting of improvement by subsequent operation.]

After some observations on the position of the patient and operator, and on the direction of the light, v. Graefe proceeds to discuss the use of chloroform. He employs this agent in only a small number of cases (7 per cent.), and less frequently now than formerly. He thinks that a moderate and controllable action on the part of the ocular muscles promotes the escape of the lens, and that the power to make the patient "look down" facilitates the removal of cortical remains. On the other hand, chloroform is of essential service when the action of the ocular muscles is spasmodic or excessive, either on account of mechanical conditions, such as unusual tension of the lids, prominence of the globes, or blepharophimosis, or on account of extreme reflex irritability, or of want of self-control. The surgeon must therefore give or withhold chloroform in accordance with the state of the eye and its appendages, viewed in relation to the general condition of the patient.

The spring speculum in common use has been modified by v. Graefe by bending it backwards towards the temple of the patient, so that it is not in the way of the operating hand. Professor v. Welz has further improved the instrument by adding two little branches to the palprebal portions, by means of which it can be grasped and controlled with facility, and can be removed from the eye with greater delicacy than before. Stress is laid on the position of the fixation forceps, which should seize the conjunctiva close to the corneal margin, and exactly in a line with its vertical meridian. With regard to the sclero-corneal section, the directions formerly given remain in force; and with regard to the formation of a conjunctival flap to the incision, the following conclusions are stated: 1. The presence of a conjunctival flap, covering the whole length of the wound, certainly promotes rapidity of healing and firmness of cicatrix, but plays a very subordinate part in the ultimate result

of the operation. 2. Slight differences in the size of the conjunctival flap are wholly unimportant, but it is better that its centre should be sloped a little downwards, and not cut to a point running upwards. The latter form is apt to become rolled, and to occasion swelling and discomfort. 3. Very large conjunctival flaps, extending more than a line and a half from the corneal margin, or reaching towards the reflection, are to be avoided. They occasion bleeding, infiltration of the submucous tissue with blood, trouble from coagula, and difficulties in the removal of the lens and cortical fragments.

With regard to the iridectomy, v. Graefe's experience leads him to insist very strongly upon its being complete up to the angles of the wound. If, from any cause, points of iris tissue are left projecting into the wound, an endeavour must be made to cause them to retract into the anterior chamber, by slight friction upon the eyeball through the closed upper lid, as in prolapsus iridis after flap extraction. In order to accomplish the complete excision that is desirable, it is well to press a little upon the globe with the closing blades of the scissors. If pointed fragments be left, v. Graefe endeavours to seize and excise them. The drawing out of the iris by the forceps before cutting it must be done carefully and without force ; and Mr. Bowman's method of partial tearing from the ciliary margin is recommended with some reservation. V. Graefe appears to doubt whether this or any other method accomplishes the removal of the whole width of the iris ; and he cites the case of a patient who died from delirium tremens shortly after linear extraction, and in whose eye he found that a strip of iris, half a millimetre in breadth, had escaped his manipulations. He is careful, before proceeding to the iridectomy, to turn down any conjunctival flap that may have been made, in order to avoid any possibility of curtailing it.

If, after the iridectomy, there be bleeding into the anterior chamber, it is desirable to wait a little before proceeding to open the capsule, since the presence of blood interferes with the accurate performance of this step of the operation. If the closed lids be lightly pressed upon with a pad of charpie for a minute or two, the bleeding will usually cease, and then slight pressure on the sclera above the section will cause the escape of the blood. During the opening of the capsule slight pressure should be made on the globe with the fixation forceps, so as to steady the lens, and to offer the necessary resistance to the cystitome. In order to insure complete laceration, the cystitome may be carried round the equator of the lens, a little over its posterior aspect.

For the removal of the lens, v. Graefe states that it is in every case *possible* to dispense with any form of traction instrument, and to accomplish the desired end by the gliding pressure of the

back of the spoon upon the sclera above the wound. The advantages of so proceeding are a less liability to loss of vitreous (in the ratio of 4 to 10), and a more complete escape of the cortex. On the other hand, when the lens is hard, its removal by pressure only takes more time, and therefore protracts the tension of the wound and of the iris, and occasions a larger per centage of cases of delayed healing. The use of the traction-hook is therefore to be recommended when the lens does not readily yield to pressure, and will be required in about one operation out of eight. To determine its necessity must be a matter of tactics and experience; but v. Graefe mentions as a chief indication an arrest of the progress of the lens—a stopping or sticking fast on its way. In such cases he still thinks his hook the best traction instrument that has been devised. When the lens is escaping regularly and uniformly under pressure, but threatens to lose the lower part of its cortex, he places the back of the spoon on the lower part of the cornea, and makes a gliding pressure upwards.

The lens being removed, the patient should turn the eye upwards, a movement that promotes the closure of the wound, and that facilitates the removal of the spring speculum.

Finally, it is necessary thoroughly to clear the pupil of cortical masses, and to press down the conjunctival flap into its proper position. After waiting a minute, renewed pressure should be used, in order to empty the chamber of its small resecretion of aqueous humour, by which some small cortical fragments will be floated away in suspension.

The uninterrupted healing of the great majority of the cases has allowed of an extremely simple after-treatment. The compressive bandage has been applied on the operating table, and the patient led away to his ward. Sometimes, on account of the pain occasioned by the fixation forceps, and by the conjunctival wound, cold moist compressors have been applied for the first ten or fifteen minutes, and then replaced by the bandage. This is at first drawn somewhat tightly, in order to procure perfect adaptation of the wound, and to check any tendency to bleeding. The bandage is allowed to remain undisturbed for about six hours. The second bandage, somewhat less tight than the first, to allow room for transudation, but still tight enough to close the eyelids, and to keep them and the globe at rest, may remain from about the sixth to about the sixteenth hour. The third, again, is drawn more firmly, and especially firmly if there be any appearance of swelling. The period from the sixteenth to the thirtieth hour is the most critical, and firm pressure is then of especial value. During this period, v. Graefe makes a fourth ascending turn of the bandage. It is necessary, after linear extraction, to make the second and third turns of equal

tightness, and not, as in flap extraction, downwards, to have the second somewhat loose and the third tighter. This method, which closes the downward flap, would tend to open the upper linear section. When there is a plentiful secretion of tears, the compress must be renewed more frequently than usual in the time immediately following the operation; but such plentiful secretion, commonly associated as it is with periodically increased tenderness to touch, is usually stopped by a night's rest, obtained, when necessary, by a morphia injection.

Although the chief purpose of the bandage is fulfilled in the first thirty-six or forty-eight hours, it should be retained for four or five days and laid aside gradually, first for an hour or so in the day, then for a longer period, then for the whole day, and lastly at night. When an eye has become accustomed to a certain pressure, its sudden and complete removal may produce a congestion, followed by hurtful consequences; and it is well known that the ocular vessels are always more distended during the hours of sleep.

Although after linear extraction there is less necessity than after the flap operation to keep the patient at rest, yet still there must be no want of caution in this particular. Opening and inspection of the eye should be avoided when all is well externally, and only practised by the aid of a wax-light and focal illumination, when swelling or other bad symptoms demand careful scrutiny. Atropine should not be instilled until the third day, and then once or twice daily. If it produce irritation of the conjunctiva, a weak solution of acetate of lead may be used alternately with it.

If the section pursue an abnormal course, the treatment is much the same as after flap operation. If within six hours the pain of the wound has not subsided, a morphia injection may be given; and if there be much lacrymation, cold compresses may be applied for five or ten minutes at each change of the bandage. Continuous cold will endanger the healing process. In plethoric persons, who are accustomed to lose blood, continuing pain may require venesection, followed by the morphia injection. In other cases, when the morphia does not remove pain, and the patient is not very feeble, an active purge may be given—ten or fifteen grains of calomel, with as much rhubarb, followed by a table-spoonful of castor-oil, if there be no evacuation within eight hours. These means will only be of service when they anticipate the more marked symptoms of mischief, such as profuse secretion and actual swelling of the lids. If these symptoms once appear, the only available treatment is to apply the compressive bandage firmly, to change it as often as the amount of discharge may require, and to apply warm aromatic poultices at each time of changing. At the same time

the general condition of the patient may be met by appropriate treatment, either antiphlogistic or supporting.

It is not one of the least merits of the linear extraction that the eye is much sooner out of danger by this method than by the flap operation. In the former the risk of suppuration scarcely extends beyond the thirty-sixth hour. In the latter it extends even to the sixth day. In v. Graefe's practice, suppurative panophthalmitis occurred for the first time in the hundred and fifth operation.

In the cases of partial inflammation, in which the formation of pus is limited in extent, the same treatment by bandaging and aromatic (camomile) poultices must be employed with morphia injections if the pain be severe and destructive of rest. When the acute stage is past, the effects may require atropine instillation, or sometimes leeching and mercurial friction.

When a slight and sub-acute or chronic irritation is set up, sometimes due to the entanglement of a bit of iris in the wound, sometimes to imperfect coaptation of its edges, sometimes to cortical *débris*, sometimes to a premature removal of the bandage and relaxation of care, it is necessary to continue the ordinary treatment longer than usual, and sometimes (after the third or fourth day) to use leeches. Any projecting portion of iris should be cut off, and the aqueous humour, if turbid, evacuated by puncture. Once only has v. Graefe found it necessary to make a downward iridectomy for the cure of such irritation.

A number of rare accidents are next mentioned and discussed, and the Professor then goes on to the subject of residual capsular opacities. He counsels great care in operating upon them, a delay of at least four months, unless there be increased tension, and a very clear prospect of improvement to sight as an essential condition for interference. A few pages are then devoted to escape of the vitreous humour, and among other possible results of this occurrence, it is said that the presence of vitreous humour in the wound may be a source of delayed healing and irritation, and therefore of danger to the result.

The death from delirium tremens, already mentioned, afforded evidence of the exact apposition of the margins of the wound in linear extraction. After flap extraction, the margin of the flap always falls a little below the level of the part from which it was severed.

With regard to the best time for the performance of a cataract operation, there are several circumstances to be taken into account. Sometimes failing vision interferes with the power of the patient to earn a living ; and it is necessary to operate earlier than one would choose to do under more favourable circumstances. Sometimes failing vision affects the spirits and health so much that on this account an early operation is desirable.

But, *ceteris paribus*, and with some exceptions, we say that both unripe and overripe cataracts are unfavourable for flap extraction. V. Graefe thinks that unripeness is of far less importance as an objection to linear extraction; although he does not deny that the transparency of portions of the lens may place a difficulty in the way of entire removal. The practice based upon his present experience is as follows:—

1. When with monocular cataract-blindness the second eye is completely healthy, extraction should only be undertaken, in patients above the age of 50, under peculiar circumstances, or at their urgent desire; and never in the grey-headed. With young or middle-aged people it may be undertaken even before the cataractous eye is quite blind.

2. If cataract be so far advanced in the second eye that the patient can no longer read rapidly, the operation may be performed without fear upon the eye first affected, even if its cataract be not quite mature. If, in spite of commencing cataract in the second eye, the patient can still read, it is then desirable to wait for the maturity (but not over-maturity) of the first.

3. When both eyes are nearly equally affected, it is unnecessary to condemn the patient by delay to the suffering attendant on increasing helplessness. The worst eye may be operated upon when its cataract approaches maturity; and the other, eight or fourteen days later, when the result of the first operation is declared.

4. The same principle applies to the very gradual laminar cataract formations; and to posterior cortical and polar cataracts when they exist in both eyes, and interfere seriously with vision.

5. When one eye has made a good recovery from the operation, the second, in a healthy patient, may be treated boldly, and its cataract removed in an early stage. There will be much better vision with two eyes from which cataracts have been removed, than with one such while the other is still cataractous.

The paper concludes with some account of the influence of age, health, and various conditions of the eye, upon the results of the operation. Upon these points, of course, larger statistics will shortly be forthcoming.—*Ophthalmic Hospital Reports*, Vol. v., Part iv., *p.* 358.

58.—ON EXTRACTION OF CATARACT BY THE SCOOP.

By J. Soelberg Wells, Esq., Professor of Ophthalmology in in King's College, and Ophthalmic Surgeon to King's College Hospital.

Prior to the operation, the pupil should be widely dilated with atropine, and the cataract examined by the oblique illumi-

nation, so that the size and hardness of the nucleus and the consistence of the cortical substance may be ascertained. For the size of the incision should be apportioned to that of the nucleus, and to the extent and consistence of the cortical substance. Nothing is more likely to mar the success of the operation than if the incision is too small, for then the iris and the lips of the section must be more or less bruised during the exit of the lens, considerable portions of the latter are sure to be stripped off, and, if they cannot be entirely removed, may set up subsequent inflammation. If the nucleus is small and the cortex softish, the incision should embrace about a quarter of the circumference of the cornea; but if the nucleus is large and hard—as, for instance, in the senile amber cataract—and the cortex firm, the size of the incision must be increased, and should extend to about one-third of the cornea. The section must also be large, if the cataract is overripe, and if little fatty or chippy fragments have collected on the surface or at the margin of the lens; for these are very apt to be stripped off and left behind if the exit of the lens is rendered difficult and forced from the section being too small.

The patient should be placed thoroughly under the influence of chloroform, so that he may be quite tranquil and passive, for any sudden start may endanger the safety of the eye, more especially during the period of the introduction of the scoop. It is, moreover, important that the different steps of the operation should be performed, if possible, without any interruption by the recovery of the patient from the effects of the chloroform; for if this happens after the excision of the iris, and there is any considerable bleeding into the anterior chamber, it may be impossible to remove the blood before it has become coagulated, owing to the time lost in again getting the patient thoroughly narcotised, and this will considerably enhance the difficulties of the other steps of the operation. The operation of scoop extraction is divided into four periods. 1. *The incision.* 2. *The iridectomy.* 3. *The laceration of the capsule.* 4. *The removal of the cataract by the scoop.*

1. *The Incision.*—With regard to the direction of the incision, I think it should always be made upwards if the surgeon is a dexterous operator and has a good assistant. As it is, however, somewhat more difficult to use the knife and the scoop in this direction than if the section is made outwards, I should advise you at first to perform the latter, more especially if the operation is upon a patient in whom neither the personal appearance nor the attainment of the most perfect vision is of much consequence. But when you have acquired some dexterity and practice the section should always be made upwards, for thus the unsightliness and discomfort of the artificial pupil will be avoided, as it

will be more or less covered by the upper lid. Let us now suppose that the right eye is to be operated upon by the upper section. The operator should stand behind and slightly to the left of the patient. Having fixed the lids with the stop speculum, he seizes with a pair of forceps held in the left hand a fold of conjunctiva and sub-conjunctival tissue, exactly beneath the centre of the cornea, and just in front of the insertion of the inferior rectus muscle, and thus steadies the eye and rolls it down so as to bring the upper edge of the cornea well into view. The point of a broad and slightly bent iridectomy knife is to be entered at the very edge of the upper portion of the cornea, just at the sclero-corneal junction, and then pushed slowly and steadily across the anterior chamber, being kept quite parallel to the iris until the section is of the desired extent. It is then to be slowly withdrawn, the angles of the incision being somewhat enlarged by slightly tilting the edge of the knife; or this may be done with a pair of blunt-pointed scissors. If the cornea is very small, the incision may be made somewhat in the sclerotic, but this is often accompanied by the disadvantage of bleeding into the anterior chamber from the conjunctival vessels, which may render the subsequent steps of the operation more difficult. Mr. Critchett makes the incision in the cornea, half a line from its junction with the sclerotic.

2. *Iridectomy.*—If the incision is not well in view, an assistant must fix the eyeball just below the cornea, and roll it downwards, without, however, dragging or pressing upon the eye; for if this be done, the hyaloid membrane may be ruptured, and the vitreous humour escape. If the iris does not protrude through the incision, a pair of small iris forceps are to be introduced (closed) into the anterior chamber, and a fold of iris seized, drawn out through the incision, and snipped off with a pair of scissors. This may be done either at one cut, or, still better, in the following manner, as devised by Mr. Bowman:—The prolapsed portion of iris is to be drawn towards the right-hand angle of the incision, and there partially divided. The remaining portion is then to be gently torn from its ciliary insertion (slight snips with the scissors aiding in the division), and drawn towards the opposite angle, where it is to be completely divided. In this way a good-sized pupil is obtained, reaching quite up to the periphery. I think it best to remove a large segment of the iris, as it diminishes the danger of bruising the iris in the withdrawal of the cataract, and allows more scope for the use of the spoon; and if any considerable fragments of lens should remain behind, there will be more room for them to swell up in, and there will be consequently less risk of inflammation. If there is any hemorrhage into the anterior chamber, the blood should be removed at once before it coagulates. The end of the

curette is to be inserted between the lisp of the incision, and a slight pressure at the same time made by the forceps upon the lower part of the eyeball. The escape of the blood may also be facilitated by gently gliding the back of the curette over the cornea towards the incision. The blood should, if possible, be removed from the anterior chamber, as it masks the further steps of the operation—viz., the laceration of the capsule and the use of the scoop, both of which require that the operator should see clearly what he is doing.

3. *Laceration of the Capsule.*—For this purpose either Graefe's cystotome or the pricker may be employed. I myself prefer the latter for this operation. The operator should roll the eye gently downwards with the forceps (held in his left hand), and pass the pricker, with its blunt part downwards, into the anterior chamber, as far as the opposite edge of the pupil, and even a little beneath the margin of the latter, especially if there be slight adhesions of the edge of the pupil to the capsule, which will be thus torn through. The point being then turned towards the lens, the pricker is to be drawn gently along on each side and in the centre, so that the capsule may be freely lacerated quite up to the margin of the lens corresponding to the incision. But the instrument must be used very lightly and delicately; otherwise the lens may be dislocated, especially if the cataract is hard. If the nucleus is large, and there is consequently only a small portion of superficial soft cortical substance, or if the cataract is immature, Mr. Bowman recommends that the body of the lens should be loosened from the capsule with the pricker or a fine bent needle by being rotated on its antero-posterior axis to and fro within the capsule.

4. *The Removal of the Lens by the Scoop.*—I have already stated that Waldau's instrument is too large, and that either Mr. Critchett's or Mr. Bowman's form of scoop is to be used. The former is so constructed as to glide readily behind the posterior surface of the cataract. It is thin, flat, and concave, so as to adapt itself accurately to the posterior convex surface of the lens. At the end there is a small receding edge, which assists in fixing and holding the cataract, and thus facilitates its removal. Mr. Bowman thinks, however, that this wedgelike end occupies too much space behind the nucleus. He, therefore, prefers another form, the end of which is not recurved, but looks from it at a very obtuse angle, and the extreme edge is very thin. The sides, except towards the end, have no edge above the general level. In those cases in which there is no soft matter to permit room for the insertion of the scoop between the lens and capsule, he uses a different shape. This instrument is nearly flat from side to side, and but slightly concave from end to end. The end has a very thin, though not sharp edge,

only slightly incurved, and the concave surface at the end is roughened by transverse lines. For those forms of cataract in which, together with a large firm nucleus, there is a sufficient layer of soft cortical substance to permit the easy passage of the scoop, I generally use Mr. Critchett's instrument. When this is not the case, I prefer Mr. Bowman's second form.

Great dexterity, delicacy, and care are required in the use of the scoop, which is to be lightly held between the forefinger and thumb. The eye having been fixed with the forceps, the scoop is to be introduced into the section, being turned directly towards the back of the eye, so that its anterior lip may glide past the free margin of the lens exposed by the iridectomy. It is of great consequence to remember that the scoop is to be at first directed backwards, for if it be passed forwards and downwards before its anterior lip has skirted the edge of the lens, the nucleus will be pushed before it, and even perhaps displaced behind the lower portion of the iris, the hyaloid membrane will in all probability be ruptured, and a considerable portion of the vitreous humour escape even before the body of the lens has been extracted. When the edge of the scoop has passed the margin of the lens, it is to be turned quite flat, and slowly and gently insinuated into the posterior cortical substance between the capsule and the nucleus until its further end has passed the margin of the latter. This forward movement must be very delicately performed by a slightly undulating or "wriggling" motion; for if the scoop is roughly pushed on it may carry the lens before it, and thus displace it, or the hyaloid membrane may be ruptured and the vitreous humour escape. When the lens is well grasped by the scoop, it should be slowly removed, care being taken that its anterior surface is not pressed too much forward; otherwise it will bruise the iris and cornea, a not unfrequent cause of subsequent iritis and circumscribed corneitis. If small portions of cortex have been stripped off during the passage of the lens into the anterior chamber, and lie in the latter, a slight backward movement of the scoop may be made before the cataract is removed through the incision, as this will gather up such fragments and draw them readily after the main portion, or they may be afterwards removed with a smaller scoop, slight pressure being at the same time made upon the globe opposite the incision. If the detached fragments are considerable, and cling to the edge of the pupil, or remain behind the iris, the speculum should be removed and the eyelids rubbed in a circular direction, so as to bring them into the anterior chamber, whence they may be readily extracted by the curette. This is much to be preferred to the frequent introduction of the scoop. The suction syringe may also be employed for the removal of small soft fragments. Any little

portions of lens matter that may cling to the lips of the incision are to be removed with the curette, as they interfere with the union of the section, and are apt to give rise to suppurative infiltration of the edge of the incision. Should a little of the vitreous humour exude through the section with the last portion of lens, it must be snipped off and a compress applied. If the vitreous escapes directly after the division of the capsule, the scoop must be passed well behind the cataract so as to extract it, if possible, *en masse*. If the loss of vitreous does not occur until the body of the lens has been extracted, any fragments of lens that remain behind should be removed. If they can be easily reached, the curette should be employed; otherwise it is better gently to rub the lids and bring them into the anterior chamber, whence they may be readily extracted. More or less vitreous will, of course, be lost, but this is better than leaving considerable fragments behind, as they swell up and give rise to great irritation and inflammation of the iris or ciliary body. The frequent introduction of the scoop is apt to produce the same mischief, and may even be followed by inflammatory infiltration of the vitreous, which may assume a suppurative character. In the latter case we can observe, with the oblique illumination, a yellow discoloration of the anterior portion of the vitreous humour. Gradually such infiltrations may become absorbed, leaving behind them more or less dense opacities, which may be floating or fixed. Should the vitreous escape, even before the capsule is opened, Mr. Bowman advises that after the iridectomy Waldau's scoop should be introduced and the lens removed in its capsule.

The after-treatment is much more simple than that of the flap extraction. On account of the size and shape of the incision there is little danger of even partial suppuration of the cornea, or of displacement of the section; the iridectomy, moreover, prevents the occurrence of prolapse of the iris, except to a very limited extent at the angles of the incision. A light compress is to be applied after the operation, or cold-water dressing if it prove agreeable to the patient, and we have a good nurse to superintend the changing of the dressing. A strong solution of atropine (four grains to the ounce) is to be applied at the end of thirty-six or forty-eight hours, and repeated two or three times daily, or more frequently if any iritis supervene. If the atropine proves irritating to the eye, it should be changed for belladonna drops (ext. bellad. ℥ss.—℥j. to ℥ij. of water). The latter are to be applied in larger quantity and more frequently than the atropine drops. If the patient has had no pain in and about the eye, and if he is restless and uncomfortable in bed, he may be permitted to leave it the day after the operation, more especially in private practice or in

special eye wards. In the general wards of the hospital I mostly keep the patients in bed for four or five days, as they cannot be so carefully guarded against draughts or cold, an exposure to which may set up iritis or irido-cyclitis. If the case does not go on so favourably, but there is severe pain in and around the eye, together with swelling and redness of the eyelids, photophobia, and lachrymation, leeches (two to four) should be applied to the temple (about an inch from the angle of the eye), and free after-bleeding encouraged by hot poppy fomentations. If there is much œdema of the lids, they should be painted with tincture of iodine, great care being taken that it does not run into the eye. If suppurative iritis or irido-choroiditis supervenes, and the patient is in good health, rapid mercurialisation should be produced. If the iritis should be accompanied by increased tension, and the iris is bulged forwards, paracentesis corneæ should be practised, and repeated if necessary. If the patient suffers much from neuralgic pains, quinine and tonics should be administered, and great relief is often experienced from subcutaneous injection of morphia. If suppuration of the cornea threatens, a firm compress is to be applied.—*Medical Times and Gazette, Feb.* 9, 1867, *p.* 135.

59.—ON THE DIFFERENT OPERATIONS FOR SENILE CATARACT.

By J. Soelberg Wells, Esq., Professor of Ophthalmology in King's College, and Ophthalmic Surgeon to King's College Hospital.

There cannot be any doubt that the common flap extraction is the most perfect operation of all, when it turns out perfectly successful. It is nearly free from pain; it does not in the least interfere with the appearance of the eye; the pupil remains central and movable; the sight is perfect, and is not at all deteriorated and confused by circles of diffusion upon the retina, which are always more or less present when an iridectomy has been performed. It must, however, be confessed that these great advantages are often more than counter-balanced by the considerable dangers which beset the operation. On account of the great size of the flap, there is much risk of the vitality of the cornea becoming impaired, and of its undergoing partial or even diffuse suppuration, which may be accompanied by suppurative iritis or irido-choroiditis. Again, prolapse of the iris is a not unfrequent complication, proving a source not only of great annoyance and irritation, but even of danger to the eye. The after-treatment also demands much care and attention—more, indeed, than can generally be bestowed in an hospital, more

especially in a general one, with no special nurses or ophthalmic wards. Now, in the scoop extraction, these two principal dangers—suppuration of the cornea and prolape of the iris—are nearly completely eliminated.* On account of the position and shape of the incision, suppuration of the cornea, even of limited extent, is rare, and a prolapse of the iris can only be slight, and is confined to the angles of the section. Moreover, chloroform may be administered without any fear. But it must admitted that iritis, chronic and insidious irido-choroiditis, inflammation of the intra-capsular cells, and secondary cataract, are more common than in flap extraction. I have found the scoop extraction so successful that I have preferred it in general to the flap operation, more especially in hospital practice, as the patient requires far less careful watching and attendance, and the after-treatment is much more simple. The confinement to the bed and house is also shorter. I think it is especially indicated in very feeble, decrepid, nervous, and unmanageable patients, who are impatient of control and confinement; in patients suffering from obstinate and severe cough, or bronchitis; also, if the pupil is adherent, or small and rigid, so that it dilates but imperfectly under the influence of atropine, or if the cataract is complicated with some choroidal or retinal lesion. But it is, without doubt, a more difficult operation than the common flap extraction, and for its successful performance demands a cool, dexterous, and practised operator. I am sometimes asked by medical practitioners and students which operation I consider the easiest and safest for an inexperienced operator. I think that, all things considered, the downward flap operation is the easiest, for when the section has been successfully completed, the chief danger and difficulty are past. Whereas in the scoop extraction it is far different, more especially when the upward operation is performed. The incision has to be followed by the iridectomy, and when this has been safely accomplished and the capsule divided, the most difficult step of all—the removal of the lens by the scoop—still remains. When the surgeon has operated several times by the lower flap extraction, and has acquired some experience and dexterity, he should proceed to the upward flap operation, the scoop extraction, and Von Graefe's new operation, so that he may be able to draw comparisons between them from his own experience, and adopt the most successful. I think that Von Graefe's operation, if its success proves as eminent in other hands as in his own, will, in all probability, supersede the scoop and flap operations. For it not only offers all the advantages of the former—viz., the administration of chloroform, the linear shape of the incision,

* The scoop operation will be found described by Mr. Critchett, in *Retrospect*, July to Dec., 1865, p. 280.

involving but a small portion of the cornea, and the iridectomy —but yet one more very important one, that in the great majority of cases the lens may be removed without the aid of any traction instrument. For cases of diabetic cataract, it is, I think, by far the safest operation, for in the flap extraction (even with a preliminary iridectomy) there is always some risk of suppuration of the cornea in these patients, as they are generally in a very feeble state of health. In the scoop extraction there is, moreover, the danger that the introduction of this instrument should set up iritis, for we must remember that in persons suffering from diabetes the iris is exceptionally impatient of irritation and bruising. In order to secure the greatest immunity from this danger, it may even be advisable to make a double iridectomy—viz., upwards and downwards, so as to get a broad vertical pupil, the two opposite portions of the iris being thus completely cut off from each other. The only two points in Von Graefe's operation which demand practice, care, and dexterity are the incision and the removal of the lens. If the section is too small, the delivery of the lens will be difficult and forced, necessitating either considerable pressure upon the eyeball, or the introduction of some form of traction instrument. If, on the other hand, it is too large, and the puncture and counter-puncture lie too far in the sclerotic, there is imminent risk of losing much vitreous humour, even perhaps before the removal of the lens is attempted. Much delicacy and dexterity is also required in coaxing out the lens by pressing upon the sclerotic with the curette (sliding manœuvre.) For if this is roughly and clumsily done, the hyaloid will be ruptured, the vitreous will escape, the lens will in all probability be pushed somewhat aside, and a scoop must be passed in to remove it. I have, in my last lecture, mentioned that this pressure upon the sclerotic is to be assisted by a light pressure by the forceps upon the sclerotic just below the cornea, which will greatly facilitate the presentation of the lens in the section. If there is no imperative call for the most perfect acuteness of vision, the section may be made downwards, for this renders the subsequent steps of the operation more easy.

Reclination or Couching.—I only mention this operation to state that, in my opinion, it should be completely abandoned. Although it may appear to be temporarily successful, it has been found that ultimately, about 50 per cent. of the eyes have been lost from chronic irido-choroiditis, &c. It is performed in the following manner:—The pupil having been widely dilated by atropine, a curved couching needle, with its convex surface turned upwards, is passed through the sclerotic at the temporal side, a little distance from the cornea, and somewhat below its horizontal diameter. When the needle has penetrated the

sclerotic, it is to be turned so as to bring its convex surface parallel to the iris, behind which it is to be carried to the edge of the pupil, and then passed diagonally across to the opposite side of the anterior chamber. When its point has arrived near the inner and upper edge of the pupil, the handle of the instrument is to be lightly tilted upwards between the fingers, and the lens slowly depressed by the concave surface of the needle into the lower and outer portion of the vitreous humour. It should be kept by the needle in this position for a few moments, in order to prevent its reascending. The needle is then to be slightly rotated, in order to disentangle its point, and drawn back to the point of entrance. The operator should wait for a few moments to see if the lens rises up again, in which case the depression is to be repeated.

Division or Solution of Cataract.—This operation is more especially indicated in the cortical cataract of children and of young persons up to the age of 20 or even 25; also in those forms of lamellar cataract in which the opacity is too extensive to allow of much benefit being derived from an artificial pupil. After the age of 35 or 40, the lens is generally too hard to undergo anything but very slow absorption, even after frequent repetitions of the operation; the iris is also more impatient of irritation and pressure, so that the danger of setting up iritis is much increased; and there are other operations which are much to be preferred for cataracts occurring at this time of life. In infants and young children an operation for cataract should not be unnecessarily postponed, as the presence of the cataract is very apt in infancy to give rise to nystagmus and to that form of amblyopia which is dependent upon none-use of the eyes, and which is similar in character to that so often met with in strabismus.

The object of the operation of division is to lacerate the anterior capsule with a fine needle, so as slightly to break up the surface of the lens and to permit the aqueous humour to come in contact with the lens substance, which imbibing the fluid, softens, and becomes gradually absorbed. The time required for the absorption varies with the age of the patient and the consistence of the cataract. In infants and young children the lens is often absorbed in from six to ten weeks, and one operation may suffice for this purpose. But in adults it may have to be repeated several times, and in them great care should be taken not to divide the capsule and the lens too freely at one sitting, for this will cause great swelling of the lens substance, or the exit of considerable flakes into the anterior chamber, and either of these causes may set up severe iritis or irido-cyclitis. The same caution is necessary in cases of lamellar cataract,

because in these a large portion of the lens is transparent and of normal consistence, and will therefore imbibe much aqueous humour and swell up very considerably.

Prior to the operation the pupil should be widely dilated with atropine. The patient, more especially if a child, should be placed under the influence of chloroform. Infants should be firmly rolled in a blanket or sheet so that their movements may be controlled. The eyelids are to be kept apart with the spring speculum, and the eye fixed with a pair of forceps. A very fine needle is then to be passed somewhat obliquely through the outer and lower quadrant of the cornea, at a point lying well within the dilated pupil, so that the iris may not be touched by the stem of the needle during the breaking up of the lens. The track of the corneal wound must not be too slanting, otherwise its channel will be too long, and the tissue of the cornea will be stretched and bruised during the working of the needle, and this may produce an opacity of the cornea; nor must it be too straight, otherwise the aqueous humour might easily escape. The size and number of the incisions in the capsule must vary with the amount of effect that we desire. If the latter is to be but very slight, a single small horizontal or vertical tear may suffice, or a crucial incision of limited extent may be made. But if we desire a more considerable effect, more especially in the cortical cataract of children, the incisions must be more extensive, or the superficial portion of the lens is to be gently broken up or comminuted by a series of short superficial incisions, which converge towards the centre of the cataract. In infants and young children the needle may be far more freely used than in adults, or in cases of lamellar or partial cataract. In such, it is always safer to repeat the operation, even several times, than to do too much at one sitting. It may be repeated at intervals of five or six weeks, if it is found that the absorption has become arrested or progresses but very slowly; but all irritability and redness of the eye should have disappeared before the needle is again introduced. If the opening in the capsule is too large, or the cataract broken up too freely, the lens will imbibe much aqueous humour, and, swelling up very considerably, will press upon the iris and ciliary body, and may thus set up severe iritis or irido-cyclitis; or if the incisions in the capsule are too extensive, fragments of lens-substance may fall into the anterior chamber, and there set up great irritation.

The needle used for this operation should be very small; its cutting spear-shaped point should only extend to about $\frac{1}{15}$th or $\frac{1}{20}$th of an inch from the end, and the stem should be cylindrical, so that the aqueous humour may be retained throughout the operation. I always use Bowman's fine stop needle which fulfils all these indications.

The after treatment is generally very simple. The pupil should be kept widely dilated with atropine, so that the iris cannot be pressed upon by the swollen lens or any flakes that may have fallen into the anterior chamber. A bandage should be worn for the first twenty-four hours, and the patient should be kept in a somewhat darkened room for the first day or two, especially if there is much reaction. Generally, however, this is but slight, the eye only looking flushed, and watering somewhat on exposure to bright light. My friend, Mr. Lawson, has even successfully operated by this method upon some cases of monocular cortical cataract in adults (between the ages of 20 and 30), and treated them throughout as out-patients. These were, however, exceptional cases, in which it was absolutely necessary that the patients should follow their employment. In order to expedite the cure, which is often of consequence in patients from the country, it is a very good plan, after the lens matter has become softened by the admission of the aqueous, to remove the whole cataract by a broad linear incision. In children this may generally be done within a week after the division, and thus the sight may be restored in a few days, whereas, otherwise, many weeks or even months would have elapsed before the cataract would have been entirely absorbed. The same proceeding may be employed in cases of partial cataract, the transparent portion of the lens being made opaque, and softened by the introduction of the needle. This mode of operation has been very successfully practised and much advocated by Mr. Bowman, who also often advantageously employs the suction syringe for the removal of the softened lens after it has been previously broken up by the needle.

If symptoms of irritation and inflammation should set in after the operation of division, and they do not readily yield to antiphlogistics, but increase in severity, and more especially if the tension of the eyeball is augmented, the cataract should be at once removed through a good-sized linear incision, made near the periphery of the cornea with an iridectomy knife. This is also to be done if the capsule has been too freely divided, and the nucleus or considerable portions of lens substance have fallen into the anterior chamber, and are setting up much irritation. If the lens is so firm that it cannot all be readily removed through the linear section, it will be wiser to combine an iridectomy with it, than to endeavour to remove the portions of lens by repeated introductions of the curette into the anterior chamber. An iridectomy is also indicated if the increase of tension has existed for some little time, and if the perception of light and the extent of the field of vision are markedly deteriorated.

Two special forms of inflammation may follow the operation

and endanger the safety of the eye. In the one, the inflammation is chiefly plastic or purulent in character. The iritis or irido-cyclitis is accompanied by plastic exudations behind the iris and into the vitreous humour, leading eventually in all probability to chronic irido-choroiditis and atrophy of the globe. In the other form, the inflammation is of a serous nature, giving rise to an increased secretion of the vitreous humour and an augmentation of the intra-ocular pressure—in a word, to a glaucomatous condition of the eyeball, which will cause irretrievable destruction of the sight if timely relief be not afforded.

As these inflammatory complications are most apt to occur in adults above the age of 15 or 20, more especially if the cataract is only partial or of a lamellar nature, Von Graefe advises that in such cases, or if any posterior synechiæ exist, an upward iridectomy should be made a few weeks before the operation of division. By so doing, plenty of room will be afforded for the swelling up of the lens, and if fragments have fallen into the anterior chamber they will produce far less irritation.—*Medical Times and Gazette, March* 23, 1867, *p.* 301.

60.—WHEN ONE EYE IS BLIND IS IT PRUDENT TO ATTEMPT TO RESTORE SIGHT WHILE THE OTHER REMAINS PERFECT?

By Haynes Walton, Esq., Surgeon to the Central London Ophthalmic Hospital, and to St. Mary's Hospital.

[This question is one which occurs frequently to men practising much amongst eye cases, and to which no definite answer is given in treatises on ophthalmic surgery.]

In discussing the subject, there are facts to be recognised, conditions and circumstances to be considered. There must be reviewed the physical causes that render the eye useless, the operations that are needed, and the probability of the result, and the quality of the sight that may be restored.

I should be deterred from operating only by the probability of the eye being too much damaged to give that amount of sight which is known as useful sight, on which point much discrimination and a long familiarity with ophthalmic surgery are imperative. I have made lateral pupils, the crystalline lens being present, and central pupils, the lens being absent. I have selected those cases only in which I was as sure as I could be that the fundus of the eye was sound, and the retina unimpaired, and the other conditions such as would insure the best amount of sight to be derived from such an operation. I place stress on this; for without it, without useful sight can be fairly expected,

I would not operate. The false pupil I have invariably made either upwards or downwards, never inwards or outwards, on account of the double vision which would probably ensue. In every case decided benefit has followed. Side-blindness has been removed, and direct vision assisted ; in those cases in which the lens was present there has been restoration of the ocular adjustment. I am giving general results, and avoiding minute detail. My last patient was operated on at the Central London Ophthalmic Hospital in September of this year. He was a soldier in a hussar regiment, and was acting as groom to a captain. When he was sent to me I found that there was a dense central corneal opacity with prolapse of the pupil, almost the whole pupillary margin being adherent. I made an upward pupil by drawing out a bit of the iris and cutting it off. Mr. Wilkinson and Mr. Taylor, my colleagues, assisted me. Perfect success ensued. My patient was highly delighted at the addition to his vision and in the improvement in the focussing power of the eye. He was particularly proud of his distant sight, but he could, too, read quickly No. 9 of Jaeger's best type. There was not the slightest confusion in vision. His master, who examined him with care, wrote to thank me for the result, and enclosed a a donation for the hospital.

In every case in which I have made a central pupil after the loss of the lens, the patients have expressed their satisfaction and pleasure at the benefit they have received. I am certain, therefore, from the result of practice, of the advisability in certain cases of making a false pupil when one eye is sound. It would seem that confusion of vision does not, and is not likely to, ensue when there is perfect vision in the one eye. This agrees with the fact that in "colomba iridis" in one eye no confusion follows.

I have a far more extended experience in operating when cataract affects only one eye. In the cases selected for my trial and observation, I was quite sure that the other eye was sound and not invaded by cataract.

In nearly all, my patients were under adult age ; a few were young adults, and two were past sixty years of age. I will allude to five of them specially, because they were in private, were persons of intelligence, and all were seen several times after they had left me as patients. One was a well-educated, clever publican, about 32 years of age. Cataract formed without any apparent cause. I operated by solution. No better result could have been obtained. The last time I saw him he assured me that he was as pleased with the new eye as ever. He said, "The more I think of it, the more satisfied I am. I no longer run against people and things."

Another was a master builder, 26 years old. His cataract was idiopathic. He sought treatment because the blindness on the one side was "the plague of his life." The result of the operation enabled him, as he expressed it, "to get on better with his business."

The third patient, about 40 years of age, was a clerk in a house of business. His disease was idiopathic. He was fully satisfied. He found the benefit he had been told he might expect.

The fourth was a governess. She came to me several times to show herself after my professional attendance had ended. She was well pleased at what had been done.

The last was a guard on a railway. He was 30 years of age. The eyeball was wounded by a splinter of wood, and cataract ensued. Since my operation he has been able to attend to his work satisfactorily. Before I operated he frequently blundered, and his defect was apparent to others.

As, then, the evidence which I have collected establishes the propriety of endeavouring to restore an amount of sight less than the standard of health in the one eye, while the other is healthy, I advocate such practice when my opinion is sought. When a child with a wounded eye and an opaque lens is brought to me by his distracted parents, anxiously asking what can be done, I set before them the state of the case, and recommend the removal of the cataract.

After 50 years of age, when, as a rule, the operation for solution is no longer applicable, because the lens is harder and the operation for extraction is the more proper, circumstances are somewhat altered, and the opinion I give a patient is modified, and for this reason. The operation for solution being so very safe, I can with confidence promise success to my patient, if time be allowed me. Extraction is attended with risk of failure. Although I suspect, from all I can learn, that I get as good results from this operation as my neighbours, I know that I cannot get the success that I can command in solution. Then there is one more degree in the quality of restored sight in the extraction cases. The sight may be very good or very inferior, although the term success is applied to all. Added to this, when a person is old, he has pretty nearly done with the active affairs of life, and he can then get on tolerably with one eye. I endeavour to do my duty in explaining all this to a patient—adding, "If nothing untoward happen, you will be the better for the operation; if it do, you will be none the worse as regards the other eye"—and leave him to determine between the unpleasantness of the operating process and chance of failure, and the probability of success and the addition of a certain amount of sight.—*Medical Times and Gazette, Feb.* 2, 1867, *p.* 109.

61.—BROWN CITRINE OINTMENT IN THE TREATMENT OF TARSAL OPHTHALMIA AND PHLYCTENULAR CONJUNCTIVITIS.

Dr. E. Williams (Cincinnati), in the Transactions of the American Medical Association, speaks in the highest terms of a *brown citrine ointment* in the treatment of these troublesome affections. He thinks it more efficacious and less irritating than Pagenstecher's ointment of precipitated yellow oxide of mercury. All crusts being first softened and removed from the eyelashes, and the eyelashes cut close if necessary, the ointment should be gently applied to the tarsal margins with the pulp of the finger, in most cases every night. If it occasion swelling, it should only be applied every other night. In cases of phlyctenulæ it may be applied, as other ointments, with the point of a camel's hair brush. Its use should be continued, once or twice a week, for some little time after recovery, in order to prevent relapse; and it may also be applied, with great benefit, to the eruptions of the face and head with which the ocular affections in question are often associated. When there is much general conjunctivitis, Dr. Williams uses also a lotion, containing four grains of sulphate of morphia, and half a grain of sulphate of copper or of zinc, to the ounce of distilled water, to be used three times a day. If there be much photophobia, he precedes the application of the ointment by the instillation of a solution of atropine, using one grain to the ounce of water for children from one to five years old, and two grains to the ounce for children above five years. These solutions are applied from three to six times in the twenty-four hours; and quinine is also given in full doses, as one or two grains three times a day. If this method does not speedily diminish the photophobia, he combines opium with the quinine, giving from half a grain to a grain for a dose. As soon as the acute symptoms are at all diminished, the ointment is applied. In less severe cases the ointment is used from the first, with the aids of good diet, regular exercise, and tonics. All forms of counter-irritation are rigidly abstained from. The ointment is the citrine ointment of the United States' Pharmacopœia, but made with cod-liver oil instead of lard and neat's foot oil. The first product is granular, but being kept over the fire, and thoroughly melted, and then stirred until cold, a perfectly smooth, soft homogeneous ointment, of a rich mahogany brown, is obtained.*—*Ophthalmic Hospital Reports*, Vol. v., Part iv., *p.* 380.

* The United States' formula is, "Hydrargyri ℥i, Acidi Nitrici f. ʒ xi, Adipis ℥iy, Ol. Ped. Bov. ℥ix." Dr. Williams does not refer to the great value of the compressive bandage in phlyctenular cases. Whatever treatment is adopted, the bandage should not be omitted.

62.—A MODIFICATION OF THE STRABISMUS OPERATION.

By Dr. R. Liebreich.

By the present methods of operating for squint, it is possible to obtain a correction of 2‴ or $2\frac{1}{2}$‴ in adults, of $2\frac{1}{2}$‴ or 3‴ in children. If the deviation be more than this, two, three, or more operations will be required. The division of the necessary correction between two operations, one for each eye, is productive of certain advantages with regard to symmetry and equality of movement; but the repetition of tenotomy on a muscle that has been previously divided is attended by many evils. It is impossible to foresee whether the effect produced by a second operation will be small or great. The cicatrix of the former section may be imperfectly divided, and may entirely nullify the effect of the subsequent one; or, on the other hand, the complete division of such a cicatrix may require a very extensive operation, which may be followed by divergence and loss of movement, sinking of the caruncle, and all the bad results of the old and now abandoned methods of operation. Urged by these considerations, and desirous to improve the accepted methods of tenotomy, Dr. Liebreich, eighteen months ago, entered upon a careful study of the anatomy of the parts concerned.

The ocular capsule, which surrounds the whole eyeball with the exception of the cornea, is composed of two widely different portions. The posterior portion forms a cup, with a firm smooth internal surface, in which the eyeball moves freely, like the head of a bone in its socket. This cup is perforated by the four recti muscles, and forms, at the line of perforation, a sharply-defined ring, so closely adherent to the muscles, that no movement can take place between them. The union between the muscles and the posterior part of the capsule is further strengthened by vaginal processes, which spring from the outside of the capsule, and cover the muscles for some distance in the orbit. Towards the eyeball there are no sheathing processes; but the posterior part of the capsule terminates abruptly at the circle of the muscular perforations; and the muscles, anterior to this circle, are for a short distance completely free from sheaths. Before their tendons reach the sclera, they pass between that membrane and the anterior part of the capsule, and become united to the latter. This anterior portion of the capsule bears to the posterior portion somewhat the relation of a convex cover to a bowl. It is much thinner than the posterior portion, and is very difficult of dissection, since, like the conjunctiva, it rapidly loses its firmness after death.

Following the anterior portion from the anterior pole of the eyeball, we begin with a circular opening the size of the cornea,

through which the latter projects. The anterior margin of this opening is united to the sclera; and, in a zone limited by this margin in front, and by the insertions of the recti muscles behind, the sclera, capsule, and conjunctiva are almost immovably adherent. Beyond the boundary of this zone the conditions change. The union between capsule and sclera is broken by the intervention of the muscles; and some loose irregular connecting tissue that here exists between the several structures has possibly furnished the basis of such complicated and fantastic descriptions as those of Guérin. The sheaths said to invest the muscles from their perforation of the capsule to their insertion, and that have been used to explain many matters, have no existence. On the contrary, as already described, the anterior half of the capsule rests on the anterior surfaces of the muscles, and is closely united to them; while the conjunctiva is closely united to the capsule over an irregular zone, the boundary of which, in eccentric movements of the eye, is indicated by a wrinkle. Beyond this boundary the union between the capsule and the conjunctiva is much looser. Part of the tissue composing the anterior portion of the capsule is reflected into the eyelids; and the rest is applied to the margin of the posterior portion, which itself sends prolongations to the margin of the orbit.

The foregoing description contains three points of special importance in the squint operation.

1. The union between the muscles and the ocular capsule is double. There is first the circular union between the posterior part of the capsule and the muscles, strengthened by the sheathing processes. There is secondly the union between the anterior part of the capsule and the muscles beneath it.

2. The conjunctiva is firmly adherent to the anterior portion of the capsule, from the margin of the cornea to the outer edge of an irregular zone. It is therefore indirectly in very intimate connection with the muscles.

3. The caruncle and plica semilunaris rest upon a band that passes from the capsule to the margin of the orbit. The contraction of the rectus internus, in adduction of the eye, stretches this band, and draws with it the caruncle towards the inner wall of the orbit. At the same time the outer edge of the caruncle, and the portion of conjunctiva next to it, are pulled backwards into a wrinkle. This is partly because the conjunctiva moves with the eyeball up to the boundary of the line of adhesion; partly because the muscle, on account of its union with the anterior portion of the capsule, draws this backwards in contraction.

It follows from the first of these three conditions that a displacement backwards of the insertion of a rectus muscle, can only be obtained by a displacement backwards of the part of the

anterior capsule that covers the muscle. This capsule, if not divided, would retain the severed tendon in its original position. On account, however, of its close adhesion to the muscle it would be very difficult, even if possible, to leave it uninjured; and, even in subconjunctival tenotomy, the capsule must usually be divided to the same extent as the tendon itself. This division of the capsule with the tendon explains how it is that a displacement backwards of the part of the anterior capsule that covers the tendon, as well as of the ring of posterior capsule that is adherent to the muscle, and therefore a displacement of the point of insertion itself, is actually effected. By enlarging the section of the capsule (v. Graefe's separation of lateral processes) the displacement backwards may be somewhat increased, but the second of the three points above mentioned is an obstacle to any considerable increase. The union between conjunctiva and capsule forbids any great yielding of the latter, unless the former also be freely divided. If this be done, we see the effect of the third point. On account of the union between muscle, capsule, and caruncle, the displaced muscle draws the caruncle, plica semilunaris, and divided conjunctiva, so much backwards and inwards that these parts assume, when the patient looks straight forward, the position that is natural to them during extreme adduction. The distance between the plica and the inner margin of the cornea is increased, the portion of the sclerotic visiblle at the inner side of the eyeball is enlarged, and the eye assumes the deformity of aspect characteristic of the old methods of operation. To obviate these evils, and to obtain any desired amount of result from a single operation, Dr. Liebreich proceeds as follows:—

For tenotomy of the internal rectus he lifts with forceps a fold of conjunctiva over the lower end of the insertion of the muscle, and divides this fold with scissors. He then carries the scissors through the wound, between the conjunctiva and the capsule, and carefully separates these structures as far as the plica semilunaris. The plica and caruncle are also to be separated in the same manner from the parts beneath them. After thus rendering the portion of capsule to be divided entirely free from the superficial structures, the tendon is taken up and cut through in the ordinary manner, and the perpendicular division of the capsule is enlarged, upwards and downwards, to an extent corresponding with the amount of displacement that is desired. Finally, the conjunctival wound is brought together by suture.

For the external rectus a similar operation is performed, in which the conjunctiva must be separated from the parts beneath as far as to the point that is drawn directly backwards in extreme abduction.

For these proceedings Dr. Liebreich claims the following advantages over former methods:—

1. *A greater freedom and a far greater range of effect.*
2. *Avoidance of a depressed caruncle or an unsightly cicatrix.*
3. *Avoidance, in every case, of more than two operations, that is, of more than one on each eye.*

With regard to the first of these, it is possible to obtain either the effect of an ordinary tenotomy or a correction of 4‴ or more in adults, and of 5‴ or more in children. Dr. Liebreich disclaims, however, the practice of tenotomy on one eye only in very extreme squint, and follows v. Graefe in preferring to divide the effect between both eyes. It is only in exceptional cases in which the mobility inwards of the squinting eye is much increased, and the opening of the lids not wider than in the other eye, that he rectifies a very large deviation by a single tenotomy. Under other circumstances, as when the departure of the patient, or some other reason, prevents a second operation, he prefers an unilateral modified tenotomy to the practice followed, in such cases, at Moorfields and elsewhere, of dividing both internal recti at the same time. He more frequently is satisfied with a single tenotomy when the deviation does not exceed 3‴ in adults, or 4‴ in children. He attaches especial importance to the conjunctival suture, for which he uses a fine curved needle and the finest English black silk. Even if several stitches are inserted, no trace of a scar will remain.

Dr. Liebreich considers the third point of advantage, the rendering repeated operations unnecessary, to be the most important. He states that in this modified tenotomy, especially when the section of capsule is extensive, the difference between the immediate and the ultimate result is very great; and that, where the mobility inwards of the eye is at first almost destroyed, it will, nevertheless, be completely restored in the course of time.—*Ophthalmic Hospital Reports*, Vol. v. part iv., *p.* 390.

63.—ON SUB-CONJUNCTIVAL INJECTION OF A SOLUTION OF CHLORIDE OF SODIUM, TO PROMOTE THE ABSORPTION OF CORNEAL OPACITIES.

Professor Rothmund ("Monats Bl. f. Augenheilk." March—May, 1866), has been employing a sub-conjunctival injection of a solution of chloride of sodium (a scruple to an ounce of water) to promote the absorption of the diffuse corneal opacities left behind by parenchymatous inflammation. In six cases he believes that he has obtained more speedy results than any other known means would have yielded. The solution is warmed, and is very slowly injected by a syringe with a curved nozzle,

through a puncture about a line and a half or two lines from the margin of the cornea. The immediate effect is to surround the cornea with an elevated ring like that of chemosis. Under a compressive bandage, the swelling disappears in five or six hours, and the resulting irritation in five or six days, after which time the cornea begins to clear from the margin. After three or four weeks the injection may be repeated; and after from three to five injections, the formation of an artificial pupil has been practicable. —*Ophthalmic Hospital Reports*, Vol. v., Part iv., *p.* 366.

64.—A CASE OF EPITHELIAL CANCER OF THE ORBIT.

By J. W. Hulke, Esq., London.

The deceptive resemblance of the external swelling to that of a carbuncle, the rapid growth of the cancer, its close sequence on a violent blow, and the safety with which the chloride of zinc paste was used for the purpose of destroying any portions of the morbid tissue which might have escaped removal by cutting, make the following case of orbital tumour one of the most instructive and interesting which I have seen:—

A railway porter, aged 42, struck his left cheek against the buffer of a carriage, and three days afterwards it became black as if bruised. Three weeks after this the cheek swelled, and the eye began to water, and in two or three days more the swelling spread to the eyelids. About this time there was bleeding from the left nostril, which has occurred occasionally ever since.

February 14th. Six weeks after the date of the injury he became an out-patient at the Royal London Ophthalmic Hospital, under my colleague, Mr. Wordsworth. At that time the lower eyelid and the skin at the inner canthus were distended, red and shining, and the eyeball was slightly displaced forwards, and to the temporal side of the orbit. Mr. Wordsworth, thinking there was an abscess, made an incision, but no pus escaped from it; and a week later he again deeply punctured the swelling with a narrow knife, with a similar negative result.

A few days after this I first saw the patient. Now the lower eyelid, especially at its centre and inner end, was very much swollen; the hollow between the eye and the nose was filled up by a prominent dusky-red swelling, dotted with small yellowish points, which had the appearance of pus, but when cut were found to contain a soft gelatinous substance. The eyeball was thrown considerably forwards, upwards, and to the temporal side, and its movements were much restricted.

The conjunctiva was red and œdematous, and filmed over with mucus. The caruncle, in the form of a large flattened tumour, protruded between the eyelids. The cornea was bright. V. = No. 19, J. at 8″. The swelling and hardness of the tissues ceased with a definite margin above, but below, shaded off imperceptibly into the cheek. A director passed into the second incision ran with very slight resistance, as if through a soft tissue, along the inner wall to the apex of the orbit, and on withdrawing it the groove was found filled with a soft gelatinous substance, which was not more minutely examined, because no microscope was at hand. At $2\frac{1}{2}$″ bare rough bone was felt.

The left nostril was much obstructed, which, he said, had been the case for a fortnight. This appeared to be partly the result of an old injury, which, eight years before, had permanently bent his nose to the right, but mainly to proceed from a general puffiness of the mucous membrane, and from an adventitious growth, apparently a simple gelatinous polypus.

Two of our colleagues regarded the swelling as carbuncular cellulitis, and its close sequence on the blow seemed consistent with the opinion that it was inflammatory; but the character of the swelling of the lids, its colour and consistence, more particularly the sago-grain-like dots in the skin, and the great enlargement of the caruncle, reminded me so forcibly of what we sometimes see when the glands and skin under the jaw are rapidly infected in those exceptionally rapid cancers of the tongue which run their course in a few weeks, that I could not come to any other conclusion than that the disease in the present case was cancerous. It was evident, from the proptosis, epiphora, and epistaxis, that the morbid growth had already extended into the orbit behind the eyeball, and now also invaded the nostril, and that surgical interference, to be of any use, should be early.

Knowing my interest in orbital tumours, Mr. Wordsworth courteously transferred the patient to my charge, and, March 2nd, I took him into the Middlesex Hospital, in order that I might watch him more closely than I could at Moorfields.

At a fresh consultation (at the Middlesex Hospital) most of my colleagues concurred in the view taken by two of the Moorfields Hospital staff, that the disease was inflammation of the cellular tissue, but one coincided with me that it was cancerous. It was agreed to watch the case for a few days longer.

I mention these facts to show the difficulty of forming a positive diagnosis.

Compresses soaked in goulard water were applied, and quinine gr. ii. were ordered to be taken twice a day.

March 6th. Since the last date there has been bleeding several times from an ulcerated spot in the caruncle; the first time it was only a few drops, but subsequently it increased to a continuous trickle. He was easier after the bleedings. He had now a worn, anxious expression; his nights were disturbed by a hacking cough, for which ether and henbane were prescribed.

March 9th. No more bleeding; his cough harasses him, causing much pain in the brow. The caruncle and lower eyelid are more swollen, and the hardness and redness have spread further in the cheek. An increased number of sago-like grains are now visible in the lower lid.

13th. The swelling is greater; he has more pain; a slight fulness is perceptible in front of the tempero-maxillary joint, and behind the angle of the mandible. Are these enlarging lymphatic glands? It had now become evident that complete extirpation of all the diseased parts afforded the only chance of prolonging, if not saving life, and the rapid rate of growth made it equally plain that further delay was not justifiable. The patient, when candidly informed of his desperate condition and prospects, accepted the slight chance held out to him by surgical interference.

14th. Having put him under the influence of chloroform, I made a preliminary incision into the tumour, and a small piece having been taken from its interior, the microscope shewed it to consist mainly of large mono- and poly-nucleated cells of an epithelioid type, which could not possibly be mistaken for any inflammatory product.

The diagnosis of cancer being thus positively confirmed, the eyeball was first enucleated (although not actually implicated, this was necessary in order to get at the intra-orbital part of the tumour behind it); the close adhesion of the tumour to the ocular capsule (O'Ferral's) occasioned a slight difficulty in doing this. The eyelids, and all the brawny part of the cheek and of the side of the nose, were encircled by a cut down to the bone, and rapidly dissected away. This done, I found the whole orbit filled with a soft, friable, succulent mass, which passed through a gap in the orbital floor, and nearly filled the antrum, without, however, having any connection with the walls of this latter cavity, the surfaces of which were lined by normal mucous membrane. This cavity also contained a little glairy mucus.

The tumour had also extended into the nose through the osplanum, and filling the back of the left nasal passage, projected in the form of a capsulated globular lobule through the posterior nares into the pharynx above the soft palate. (A soft simple polypus was taken from the front of this nostril.) In order to follow the tumour in this direction I had to cut away much of the maxilla, the left nasal bone, and the lateral mass of

the ethmoid. It was now possible to detach the periosteum from the bones with a raspatory wherever the tumour appeared to have been connected with these latter, and when this had been done the bony surfaces were rubbed over with a hot iron. Strips of lint, spread with chloride of zinc paste, were applied to the entire wounded surface of the bone and soft parts. This completed the operation.

The bleeding was very free, but yet less than I had anticipated, and had quite ceased before the zinc was applied. The enlarged ophthalmic artery cut at the apex of the orbit continued to bleed in spite of the cautery, but was stopped by a small compress dipped in liq. ferri perchlor.

The frontal sinus was opened in the course of the operation, and found not to be involved.

The limits of the tumour were much more extensive than I had anticipated, particularly towards the pharynx and the antrum, for the body of the maxilla was not expanded nor the palate depressed.

The minute structure was characteristic of epithelial cancer. The preponderating histological elements were large scale-like epithelial cells, closely packed in cylindrical masses and in concentric clusters. These, with a small quantity of fibrous, interstitial connective tissue, and bloodvessels, made up the great mass of the tumour in which no remains of the normal tissues were found; but along the line of extension where cancer was invading the normal tissues, there was a thin stratum of a new cell-tissue pushing out organoid buds among the normal tissues, and this new tissue consisted of small roundish cells about the size of those of the deeper layers of the rete mucosum of the cutis.

For some hours after the operation, I was anxious lest the fluids from the wound, saturated with chloride of zinc, trickling over the upper surface of the velum palati into the throat, might excite inflammatory œdema of the fauces and epiglottis, or perhaps poison the patient, but nothing of the kind occurred.

15th. Pulse 104; skin cool; tongue clean; slight swelling and redness of the edges of the wound and slight œdema of the right eyelids. His diet was strong beef-tea and a couple of eggs, and brandy ℥viii, but he said he had not enough to eat, and asked for a mutton chop, which was given him.

16th. Pulse 100; slept fairly; slight extension of the inflammatory redness. Complains of headache, which was relieved by a caoutchouc bag of ice. It would be too tedious to detail the daily report, and from this time I shall only mention the leading points. The dry, hard bark-like eschar formed by the caustic zinc was soon detached at its circumference by a narrow line of ulceration, which was quickly followed by cicatrization and

shrinking, so that when the entire eschar fell away, April 11th, the wound was much smaller than at the time of the operation.

April 24th. At the upper and inner angle of the orbit, and on the septum nasi, the granulations are rather exuberant. Does this overgrowth arise from the irritation of small sequestra not yet detached, or does it mean a recurrence of the cancer?

Several sequestra were withdrawn from among the granulations, which subsequently assumed a more healthy appearance.

May 7th. The outer edge of the orbit is becoming loose.

23rd. A large hard fixed nodule has become palpable since the last note, behind the angle of the jaw. Three days later this had much enlarged.

29th. The loose edge of the orbit was lifted off.

June 1st. A fleshy knob has sprouted from the lower and outer part of the orbit corresponding to the spheno-maxillary fissure. The manifestly cancerous infection of the lymphatic gland, noticed on the 23rd, made it useless to destroy this. Both it and the gland behind the jaw increased, so that by June 8th he could not chew solid food, and could only separate the jaws to a very slight extent.

29th. Deglutition is now difficult. The tumour behind the jaw is very prominent, and its summit is soft and red; it is evidently about to break. The orbit is becoming filled with a growth from the outer wall.

In a few days the tumour behind the jaw broke and fungated, and from this time bled frequently. It widely infiltrated the neck, and from time to time large portions sloughed away, meanwhile the orbital growth made little progress. In spite of the frequent loss of blood and the profuse discharge from the wound, he survived till November 29th, 1866.

Mr. Arnott, our Surgical Registrar, has supplied me with the following memorandum of the post-mortem examination.

"There is a large sloughy cavity in the place of the left orbit which reaches deeply towards the pharynx, and outwards to the zygoma, while at its inner side are seen the remains of the septum narium. A protuberant, fungating ulcer reaches from the edge of this cavity to below the lower jaw. It involves all that remains of the cheek, and below it nearly as far as the collar-bone, the neck from the middle line, below the ear, nearly to the vertebral spines, is hard and swollen. The right side of the neck, below and behind the jaw, is similarly swollen in a less degree. The swelling proceeds from a cancerous growth which has destroyed the outer bony wall of the orbit, the part of the malar bone not removed at the operation, a portion of the ascending ramus of the lower jaw, and all the soft tissues in these situations. The sterno-cleido mastoideus muscle is lost in the centre of the cancerous mass, which pushes aside but does

not structurally implicate the arteria carotis communis or vena jugularis interna. There were a few scattered knots of chalky tubercle in the lungs, evidently of old date, and with this exception the thoracic and abdominal viscera were healthy. No secondary infection of distant lymphatic glands was found."

In the progressive, continuous infection of the neck, and the absence of distant, interrupted infection, we see the same features which are so generally observed in epithelioma of the lip and uterus, which, while they infect the next lymphatic glands, are rarely accompanied by secondary tumours in distant organs. It is just this minor diffusibility which makes epithelioma less desperate than scirrhus, and brings it more within the scope of surgery. The longer average duration of life in epithelioma over that in other forms of cancer, 53 months according to Sibley, proceeds from the same cause. This case, lasting only about 10 months, was therefore an unusually rapid one, which make the postponement of the operation the more to be regretted.

Although operative interference in cancer of the eyeball or orbit is discountenanced as useless, or worse than useless, by some surgeons, these constitute a very small and rapidly decreasing minority, and it is generally allowed that thorough extirpation alone offers a prospect of immunity from recurrence, relative or complete, whether the tumour be a carcinoma *stricte sic dictum*, or an infecting sarcoma. But here unanimity ceases, for beyond agreeing that thorough extirpation is only to be hoped for at an early stage, when the growth originates in the bones or in the periorbita, we found surgeons of the highest reputation not agreed as to the best way of operating, but practising different methods, some of which, from their very nature, involve the practical non-observance of that principle on which every operative measure should rest, viz., that it should be thorough for the particular end in view. Perhaps the chief reason of this is the supposition that the situation of the orbit, especially its nearness to the brain, does not admit of the same methods of operating as are advantageously employed upon the trunk and limbs; while a minor reason is the want of personal familiarity with the resources of general surgery by those who exclusively devote themselves to a special branch.

As far as I have seen and read, the two methods of removing orbital tumours in common use with us are excision of the tumour with knife or scissors, and its evulsion with blunt instruments. The first I have, till lately, always adopted myself, too often to see before long the tumour sprout up anew. Nor is this surprising, since diffusibility, infectiousness, is the leading feature of carcinoma, and in a scarcely less degree of some sarcomata; and the larger number of orbital tumours fall into

one of these classes. The microscopic examination of the tissues around a cancerous breast, at points where neither touch nor unaided eye could detect any traces of the morbid growth, has again and again proved their already infection; and in an intra-ocular cancer, where the sclerotic appeared, on close scrutiny, to be entire, I have found the loose areolar tissue outside the eyeball, between the sclerotic coat and the capsular fascia, as well as that between the outer and the inner sheath of the optic nerve, to be microscopically infiltrated. It is therefore evident that the removal of those tissues only which are so grossly diseased as to be appreciable as such by sight or touch is insufficient, and that we ought to adapt to the orbit the maxim which enjoins the excision of a zone of normal tissue whenever we excise a cancerous or other infecting tumour seated in the trunk.

The same incompleteness inseparable in most instances from simple excision, belongs in a much greater degree to the practice of tearing out orbital tumours with blunt elevators. Cysts and encapsuled tumours may no doubt be entirely enucleated with these instruments, but an infiltrating growth such as cancer, which has no distinct definite boundary, cannot be cleanly shelled out with them. Whenever I have seen them used the tumour has been torn in pieces, and so ragged a wound has been left that a suspicion, sometimes amounting to a conviction, that shreds of the morbid growth have been left has forced itself upon me. But if these blunt instruments are unsuitable for the complete extirpation of an infiltrating tumour, there is also an additional reason why they should not be used for this purpose. It requires so much force to wrench away the tumour from the orbital walls, that these latter may be inadvertently pierced, and the elevator or director plunged into the brain; or pieces of the roof of the orbit may be torn away without the operator being at the moment aware of the damage he is inflicting: both these accidents have actually happened.

The best method is, I believe, a combination of excision and escharotics. By clipping out the mass with a blunt-pointed scissors, curved on the flat, strong but not unmanageably large, and carefully exploring with the finger as we proceed, we avoid the risks incurred when elevators are employed. In this way I have safely removed both very tough and very friable tumours. When the orbit has been thus emptied, if its walls are anywhere compromised by the disease, the periorbita can be detached with an elevator or a raspatory, and as much of the bone itself as is necessary removed, and this safely, because the part acted on is directly under the finger, and the degree of force used can be exactly estimated, and its direction controlled. This done, for the double object of stopping any bleeding vessels, and completing the destruction of any part of the tumour inacces-

sible to the scissors, the wounded surface should be touched with the hot iron, and when the bleeding has completely ceased, the operation is finished by coating the wound with lint spread with the escharotic zinc paste, the formula for which I gave in the last number.

The advantages of this escharotic are its manageability, the small amount of local inflammation, and the slight symptomatic disturbance which follows its use, even when it is applied to a very large surface. The depth to which it will bite can be regulated with some certainty by the thickness of the layer of the paste, and the eschar is a hard dry bark, the separation of which is followed step by step by cicatrization, so that by the time it is fully detached the wound is not unfrequently reduced to one-third or less of its original size. These characteristics of the zinc escharotic allow us to apply it to the orbital walls with more safety than any one who had not watched its use would be inclined to credit. Of this the case to which these remarks are appended is a good example. The practice was originated, as far as I know, in the Middlesex Hospital by Mr. Moore, and it has been adopted by Mr. De Morgan, Mr. Lawson, and by myself, in several cases with very encouraging results. In no instance has fatal intracranial inflammation been provoked, but I may not conceal that in three instances there was considerable excitation manifested by epileptiform fits a few hours after the operation. These, though sufficiently alarming, ceased, and did not recur. There is a disadvantage about which I must add one word. During cicatrization the eyelids are drawn into the orbit, so that an artificial eye cannot be adopted. No doubt this is a drawback, but one of little moment, seeing that the stake is life.—*Ophthalmic Hospital Reports*, Vol. v., Part iv., *p.* 336.

65.—ON THE USE OF ARTIFICIAL SUPPORT IN CERTAIN FORMS OF DEAFNESS; WITH CASES.

By Dr. Edward Bishop, Surgeon to the Ear Infirmary, Sackville-street, London.

The subject of appliances to the ear in cases of deafness attended by perforate membrana tympani is one of great interest. To Dr. Yearsley we are indebted for this addition to the therapeutics of aural practice; but the question of late has acquired additional interest from the enunciation of a fact which somewhat enlarges the sphere of their usefulness. Dr. Erhard, of Berlin, discovered that the wetted cotton remedy was of essential service to himself, although he had not a perforate membrana tympani, which had been set down by Yearsley as a sine qua non of its success. Erhard naturally directed his in-

quiries to the solution of the mystery; and during his investigations he discovered in the Museum of Pathology in Berlin, a preparation, in which there was a disconnection of the incus and the stapes, with a loss of the os orbiculare; such solution of continuity appeared to him conclusive as to the modus operandi of the cotton wool in his own case, by the support it rendered in re-establishing the connection between the outer and inner membranes.

Those practitioners who have made aural disease a particular study, and have used artificial support in one form or another with success in cases attended with perforation, have, I doubt not, been led, like myself, to try its effects in obstinate cases where this lesion did not exist, and when successful have explained its operation as Erhard did. This explanation, however, and the consequent rational treatment founded thereon, has received additional confirmation lately. At a meeting of the Royal Medico-Chirurgical Society in February last, the late Mr. Toynbee exhibited a number of specimens of the ossicula in situ, in which there was a disconnection between the incus and stapes; these specimens would have been more interesting and more valuable had he given their history, and been able to state to what extent functional derangement was coincident with structural lesion; but without this it was evident that such a condition is a less uncommon *post-mortem* appearance than has been suspected. In a paper read at the same time he adopted the explanation of the modus operandi of artificial applications in these cases, as given by Erhard, and also by Yearsley in a paper read before the British Medical Association at Edinburgh —an explanation therefore of course by no means novel. It speaks well for the candour of the late Mr. Toynbee, that he should have thus set forth his altered views on this disputed point. The practical objection to his artificial membrane of india-rubber or gutta-percha is the distress and irritation it occasions; certainly it is difficult to abandon an ingenious invention, and therefore it is probable that Mr. Toynbee did not give in his adhesion to the simple and unirritating bit of cotton wool, but advised the use of a small hollow globe of india-rubber filled with air as a substitute for his artificial membrane —thus imitating as far as possible, without abandoning the material, the original remedy as proposed by Yearsley.

The following illustrative cases, I hope, will prove interesting:—

Case 1.—Miss M., of Canterbury, æt. 19, consulted me in August last. Her case presented the usual sad history of the ravages of scarlet fever. For several years she had been almost excluded from society, and her friends had quite abandoned the idea of treatment, as she had some years before tried Toynbee's

artificial membrane, which caused such distress she could not use it. The left ear was completely disorganised, a considerable part of the temporal bone was gone, and of course nothing could be done. The right ear showed a perforation of the membrane, and there was a little discharge issuing from the meatus; she could not hear a watch when in contact, and the tick of a loud metronome was very indistinct. I inserted the wetted cotton support in the usual way, and immediately she could hear my voice, and enter comfortably into conversation. I dare not attempt to occupy your space by giving the details of this interesting case, but in less than a fortnight's time she could apply the cotton herself very well, and was able to join in general conversation with ease, and expressed all the delight of a person having so important a sense suddenly restored.

Case 2.—S. W., a tailor, admitted (Ear Infirmary, Sackville-street,) July 6th, 1866. Very emaciated; deaf for the last ten years; for two or three years non-progressive, until recently, when he found himself much worse, and now is suffering from pain and singing in each ear, and is almost perfectly deaf, the eyes injected, skin hot, pulse 110. Ordered an aperient of calomel and colocyth, saline mixture, and three leeches to each ear.

9th. Relieved of all acute symptoms, tinnitus subsided.

13th. Is now as well as he has been for many years. Hearing distance (by watch) one inch, right ear, contact only left ear, both tympanic membranes white and pearly, no perforation, ear wax absent. Eustachian passages open, throat slightly sore, tonsils somewhat enlarged. Applied solution of nitrate of silver to throat, and used artificial support (wetted cotton wool) on each side. The hearing was at once improved; he could hear the tick of the watch twelve inches away on the left, the worst side, on the right only about half of this distance; conversation he heard comfortably without much effort. In three weeks' time the patient could adjust the support himself, and can now hear the tick of the watch more than twenty-four inches from each ear. Can we account for the marked improvement in this case in any other way than that there was a disconnection of the chain of bones as they traversed the cavity of the tympanum?—*Medical Press and Circular, Dec.* 19, 1867, *p.* 627.

66.—CASE OF RESTORATION OF A PERFORATED AND COLLAPSED MEMBRANA TYMPANI.

By J. Hinton, Esq., Aural Surgeon to Guy's Hospital.

The following case is an instance of the facility with which, by the use of very simple means, a cure may be effected in a

morbid condition of the ear, which would otherwise, in all probility, be attended not only with more or less of permanent deafness, but with a perpetual liability to periodical attacks of inflammation and suppuration of the tympanum.

E. F., aged 8, was brought to me on the 25th July last, with the following history:—Shortly after being vaccinated over a nævus on the arm, about the age of eighteen months, a discharge had been noticed from the left ear, and had continued with interruptions ever since; there had been none since May, when three or four blisters had been applied, as frequently before. She had had measles last year, not seeming to affect the ear; had not had scarlatina; deafness on the left side had existed from the first; but there had not been pain. The voice was heard on the left side only when distinct and near; watch four inches (heard on the right side at four feet). The left meatus contained a little old discharge, on the removal of which the membrana tympani was seen to be sunk inwards, in contact or nearly in contact with the inner wall of the tympanum. It was of a glistening white colour and irregular surface, the short process of the malleus strongly projecting, and behind it and a little below was a circular orifice, about a line in diameter, the edges of which were thin and appeared to be closely approximated to the pale and somewhat granular mucous surface behind. The patient could not pass air into the tympanum. The tonsils were large and the faucial mucous membrane swollen. Health good.

Two conditions here demanded remedy—1st, the orifice in the membrane; and 2nd, the alteration in its position. The latter indeed was in all probability the chief cause of the impediment to hearing, inasmuch as perforations of much larger size may exist with little diminution of that function. But the perforation first demanded treatment, because its closure afforded the only conditions under which a successful attempt could be made to bring back the membrane to its right position. This result could be obtained only by the agency of a stream of air introduced through the Eustachian tube, operating on the membrane from within, and requiring therefore that it should be perfect.

The new and simple procedure introduced by Pollitzer for inflating the tympanum with air afforded a means of effecting both objects. The plan of operation is the following:—The patient, being seated, takes a small mouthful of water, which he keeps in the mouth until at a signal given by the surgeon he swallows it. The surgeon, standing on his right side, introduces into the nostril of the side to be operated on a small flexible tube, and with his thumb and fingers closes the nostrils over it. This tube may be connected either with an india-rubber bag, or with the surgeon's mouth; in either case he forces into it a

sharp stream of air, at the moment when, at the given signal, the patient swallows. The air then rushes up the Eustachian tube (opened by the act of swallowing), and in the great majority of cases, especially in children, overcomes any obstruction that may exist.

In the present case this procedure was employed to effect both the objects desired; first, to induce healing of the orifice; and secondly, to bring forward to its right position the collapsed membrane. The former object was gained by washing out the tympanum persistently by means of a warm solution of zinci sulph. (gr. iv. ad. ℥j.), to which at first gr. i. of hydrochlorate of morphia was added. The meatus was filled with the solution, and air then blown repeatedly through the tympanum in the manner described. By this means the solution was made freely to enter the tympanic cavity, and to coagulate whatever of viscid mucous discharge hung about its crevices. Sometimes a lotion of dilute acetic acid (℥j. ad ℥j.), was used in the same way. At the same time the throat was treated with a solution of alum (gr. v. ad ℥j.), by means of the atomizer, and subsequently by alum applied in powder to the region of the Eustachian tube; and in the course of a few weeks she was able herself to pass air into the tympanum, when the tube was gradually discontinued.

By the middle of October the perforation was healed, the surface being at first of a pink colour, and soft fleshy aspect; but in two or three weeks assuming the thin transparent appearance usual with scars of the membrana tympani.

During this time the hearing did not improve; but after the intermission of a fortnight, to allow time for the new tissue to gain strength, the free inflation of the ear was resumed and carried out twice a week. Under its influence the membrana tympani could be watched gradually recovering from its sunken state, and regaining its natural position; its normal aspect and lustre also in great part returning. At the present time, December 10th, the appearance of the greater part of the membrane is almost that of health; there is, however, still an unnatural prominence of the short process of the malleus and thickening of the membrane around it, at the upper and anterior part also is an oval depression which does not yield to the pressure of the air. The scar of the perforation is just discernible as a darker spot surrounded by a whiter slightly thickened ring. The hearing has also gradually improved; the watch is now heard at thirty inches, and a whisper at ten or twelve feet.

I have reported this case because it shows the effect of very simple appliances, easily at the command of all, in relieving what might have appeared a very untractable lesion. Similar

conditions are very frequent in children, and when detected, by examination with the speculum, they may be treated with the greatest probability of a good result. In the chronic and recurrent forms of "otorrhœa" in children, I have found the membrana tympani almost always perforated to a greater or less extent. The accumulation of mucus, more or less puriform in character, within the tympanum, which is exceedingly frequent in childhood, continually leads to rupture and partial destruction of the membrane; the tissues of the remaining portion appear, at the same time, to become soft and wasted, and hence it sinks inwards, yielding probably in part to the traction of the irritated tympanic muscles. This condition in after-life, when adhesions have formed and become firm, admits of but partial and tedious relief; and taken in an earlier stage, even though after the lapse of several years, and after all signs of acute affection have long ceased, it may yield a result as gratifying to the surgeon as it is beneficial to the patient.—*Medical Press and Circular, Dec.* 19, 1866, *p.* 614.

DISEASES OF THE SKIN.

67.—ON THE DIAGNOSIS OF SKIN DISEASES.

By Dr. Tilbury Fox, Physician to St. John's Hospital for Skin Diseases.

[It cannot be denied but that few men ever attempt a careful diagnosis in skin diseases, and that errors in diagnosis when it is attempted are much more common than in any other branch of medicine. The following observations are offered as an aid in diagnosis.]

The Mode of Onset.—It is not uncommon for the majority of cases to be preceded or even accompanied by severe constitutional disturbance; therefore, if there be much fever and malaise, especially where the patient takes to bed from a sheer feeling of illness, whenever rash begins to show we suspect something grave, one of the acute specific diseases probably. However, amongst the occasional exceptions, acute lichen, erythema nodosum, secondary syphilis, acute eczema, pityriasis rubra, acute pemphigus, urticaria, herpes zoster, and erysipelas may be named. Secondary syphilis has been mistaken for the mottling of typhus and measles, acute lichen for measles, and herpes zoster for pleurisy, on account of the pain. It is merely necessary to be aware of these mistakes to avoid them. This test is then important as the rule. When symmetrical, the dis-

ease is due, usually, to a blood-poison; when unsymmetrical, to local causes or affections of the nervous trunks probably.

Temperament.—We guess at a glance whether our patient is of full habit and likely to have a loaded system, especially the case in women; whether there be organic disease, or if there be a dyspeptic habit, or an ill-fed system, that signifies debility. If *lymphatic*, we may expect eczema, impetigo, intertrigo, the pustular aspect of scabies, and ringworm; if *gouty*, the scaly diseases, chronic eczemas, and lichen agrius; if *rheumatic*, erythema nodosum; if *strumous*, eczema lupus; if *florid*, alphos especially. There is also the *cancerous* aspect, and in *nervous* subjects various hyperæsthesiæ engrafted upon ordinary eruptions, and so on. Red-haired subjects get pityriasis of the scalp.

We ask how long the disease has existed?

Hereditary diseases are—lepra, psoriasis, ichthyosis, lichen, eczema, and syphiloderma especially.

Congenital diseases are—syphilodermata, pemphigus, pigmentary, nævoid, and ichthyosis (scales).

Chronicity.—The more chronic a disease is the more does it tend to become a local disease; and this is the case with hereditary affections, hence in these cases *local* treatment is the most important.

Has the patient had the disease before?

Recurrence.—Lepra is essentially the disease which recurs, but syphilitic diseases also return.

Occupation.—Cooks get eczema and erythema, and lichen agrius about the backs of the hands, with bakers, grocers, and bricklayers; chimney-sweepers are liable to epithelioma of the scrotum; cotton-workers to urticaria; butchers and graziers to whitlow, boils and malignant pustule; dragoons and shoemakers to an inveterate form of eczema in the fork of the thighs; young women who come from the country and have the full diet fare of the London servants, get an overloaded system that shows itself as erythema papulatum, erythema nodosum, or impetigo.

When did the disease first appear?

Age is very important. During the first six weeks of life congenital syphilis develops itself; intertrigo, eczema of the scalp, and seborrhœa capilitii; the congenital diseases of course show also. Syphilitic pemphigus occurs, it is said, before the child is six months old, not afterwards; during the first few months and up to and through the period of dentition, strophulus and eczema. One need only mention important facts. Cancer (epithelioma) is a disease of late life—not before thirty, about sixty; and rodent ulcer about the age of sixty and beyond. Lupus is a disease which commences in early and young life, and the same be said of syphilis. The parasitic diseases

occur in the young, rarely after twenty-one years of age. Herpes circinatus (or, as I call it, tinea circinata) is the form seen in middle life. In old people, prurigo, ecthyma cachecticum, pemphigus, and pruritus occur, with cancer and rodent ulcer.

Where did the disease first appear?

Seat.—On the *scalp* we have parasitic diseases, keerion, eczema, porrigo at the back of the head, sebaceous cysts, alopecia, and lepra; *ears*, eczema; *forehead*, lepra and herpes zoster; *near the eye*, chromidrosis, rodent ulcer, xanthelasma or vitiligoidea, molluscum; *face generally*, acne, impetigo contagiosa, erysipelas, lichen, syphilitic eruptions, erythema; *nose*, lupus, hypertrophy, acne rosacea; *cheeks*, lupus, malignant pustule, acne rosacea; *upper lip*, impetigo sycosiforme, herpes labialis; *lower lip*, epithelioma; *chin*, sycosis; *whiskers*, acne sycosiforme; *angle of mouth*, congenital syphilis; *chest*, chloasma and keloid; *under clavicle*, sudamina; *about the nipples in women*, scabies; *in the side*, shingles; *outer* and *posterior* aspects of *trunk*, prurigo and lichen, as distinguished from eczema on the *inner* and *front* aspects; *elbows* and *knees*, lepra, psoriasis; *interdigits* and about *wrists*, scabies; *back of hands*, lichen and grocers' and bakers' itch; *palm of hands* alone, syphilitic lepra and erythema; *buttocks and feet of children*, scabies; *upper line of penis*, scabies; *scrotum*, eczema, psoriasis, and epithelioma in chimney-sweepers; *front of leg*, erythema nodosum, and in old people, eczema rubrum; *about the anus in children*, congenital syphilis; *generally over the body*, pemphigus foliaceus and pityriasis rubra; *in the bend of joints and armpits*, eczema rubrum; and limited to the *hair follicles*, lichen and pityriasis pilaris; and to these and the *sebaceous glands*, lichen scrofulosis and lichen rubra.

Our next query ascertains whether the eruption be *persistent* or *evanescent* (urticaria), developed pretty much at once (acute specific diseases, herpes zoster, herpes), or *consecutive*, as in most cases, *uniform* or *multiform:* the latter being the character of scabies and syphilodermata especially, and also seen in the complication of scabies by impetigo contagiosa; urticaria, and scabies or purpura; scabies and prurigo, eczema and scabies, eczema and lichen (eczema lichenodes), eczema and psoriasis, seen oftentimes in the fork of the thighs and about the bend and front of the elbow. This fact of the intermingling of diseases is one of the most important to remember; to forget it is to lay oneself open to one of the commonest sources of error.

To scrutinise closely the character of the eruption to ascertain the *primitive elementary lesion*, is our next duty. In acute cases we have no difficulty; but in chronic instances it is frequently difficult, because the disease is often modified by *secondary changes* — brought about by (1) abortive development; (2) by treatment; (3) by the intercurrence and intermingling with

other diseases as before mentioned. Most skin diseases employ the agency of inflammation in their operation; and this consists of redness (congestive), papulation (depositive), vesiculation (effusive), pustulation, &c. Now some diseases only need the aid of the minor, others of the greater, of these; hence by abortive development a vesicular disease (eczema) may only reach the erythematous or the papular stage. And we must remember that our guides to the correct interpretation must be the concomitants in each case. The intermingling of two or more diseases requires to be kept in mind; and the effect of treatment is oftentimes to check secretion, and to produce an unnatural scaliness and dryness, so that a chronic eczema looks like psoriasis (lepra). The history, however, shows it to have "run" or discharged in its early days. *Scratching*, too, always induces additional inflammation, and flannel very much so. In chronic cases, we necessarily go to the newly developed part of the eruption to ascertain the nature of the elementary lesion—that is to say, to newly affected parts where the eruption is scattered and discrete, and to the edge of patches. In many cases congestion is augmented by deficiency of elimination, especially in regard to the kidneys. I believe our omission to attend to this is greatly to be reprehended, and in elderly people the effect of gravitation and retarded circulation is most potent. Many a case of eczema rubrum is exaggerated by, if its visible presence be not dependent upon, a deficient kidney action.—*Lancet, March* 2, 1867, *p.* 268.

68.—ON THE INFLUENCE OF FLANNEL AND SCRATCHING; AND ON MEDICINAL RASHES.

By Dr. Tilbury Fox, Physician to St. John's Hospital for Skin Diseases.

We are wont to say, "Familiarity breeds contempt." In no case is the truth of the precept better illustrated than in the therapeutics of skin disease. Oftentimes the simplest and most commonplace agencies, harmless in health, become active in the intensification of diseased conditions. This is the case with the *wearing of flannel* next the skin. We scarcely need more than a reminder of the fact that some skins are so irritable in health as to be excited to an unbearable degree by the use of flannel, to see that whenever there is a tendency to exaltation of the sensibility of the skin, this may not only be heightened by the flannel, but the flannel may also give rise to decided physical alteration. In a very large number of cases of skin disease pruritus is intensified and the disease even protracted in this way, and in proportion to the degree of uncleanliness. Flannel

acts mechanically by augmenting, or rather conserving, the local heat, and intensifying reflex action. *Practical rule:* When you have a congestive state of skin, or any disposition to neurosis, take off the flannel, and place it, if necessary, outside the linen; this will prevent any "catching cold." The diseases in which this is advisable are, chiefly—erythemata, roseola, urticaria, certainly syphilodermata in their early stages, scabies, and prurigo. A remembrance of this little practical point will sometimes give us the greatest cause to be thankful that we attended to it, trifling though it be.

Scratching plays an important part in the modification of skin diseases, most of which are accompanied by itching; to relieve which, scratching is the natural topical application. What does it do?

1. When there is no eruption, it may produce one. For example, in pruritus, it gives rise to excoriations, an artificial eczema, general enlargement and turgescence of the follicles of the skin, with, perhaps, abrasion of the cuticle over and above them; wheals in a nettle-rash subject; ecthymatous pustules in the ill-conditioned. Of course in all these cases there is a basis to go upon—a tendency to the several diseases produced. Scratch a healthy person, and the local injury is soon remedied.

2. It augments and modifies existing eruptions. See in eczema how it inflames it, and increases the discharge and subsequent crusting; in lichen, the thickening of the derma. In scabies it gives rise to the peculiar "scratched lines" so characteristic of the disease, and many of the ecthymatous pustules; in prurigo, the peculiar ecchymosed apices of the papules, and helps out the coarse urtication.

3. When the disease is *non-contagious*, secretion, if present, may be transferred, and when acrid sets up local inflammation; and when *contagious*, scratching is the surest method of inoculation, as in the case of the contagious impetigo or porrigo. Children in this way transplant the disease from the head to various other parts of the body. Mothers, beyond a doubt, get it about their hands from children. As an instance of the effect of scratching, I may mention the case of a gentleman I have recently seen in consultation who has tried every remedy and doctor on the continent, taken the baths at Aix, and been treated by a large number of medical men in London for prurigo. He has taken drugs in any amount, and about sixty prescriptions were handed to me for my inspection. In this case, which was of three years' duration, the itching was cruel, the whole skin reddened, thickened, dense, hot, and exceedingly appreciable of change; whilst almost every conceivable application had been used. My impression as to the influence of scratching turned out to be correct; and, by dint of perseverance, the patient

avoided this source of irritation, and is now practically well. In this case, in which the least scratching was followed by general reflex irritation, the teachings of sound reasoning in league with clinical reminiscences put to shame that empiricism which is the curse of cutaneous medicine.

Medicinal rashes are important to remember. Hardy has especially noticed an eruption produced by the inunction of *mercurial* ointment. It is an erythema upon which vesicles form, and pour out a thinnish, clear fluid. The vesicles are quickly broken, the contents dessicate, and the redness remains for a week or ten days. It is clearly a local disease, and not a true eczema.

The *nitrate of silver* discoloration needs no further comment than this, that the silver seems to be deposited elsewhere than on the skin—the lining membrane of some vessels, it is thought.

Arsenic is said to give rise to eczema. I have never seen this, but a lichen well developed about the face, neck, arms, and hands; and erythema of the palms of the hands, with violent fever, are sometimes produced. I am positive it can give rise to double vision by disturbing in some way the accomodation of the two eyes. It can also induce erythema, especially of the face, and a puffiness about the eyes,—I mean in small doses, and during its early exhibition; and it has happened to me to see the very best results in these cases from the perseverance in its use, notwithstanding these occurrences, provided there are no gastric symptoms. I have seen herpes zoster come on during its exhibition, and some think that it may give rise to this disease. I am not disposed to believe in any direct influence, but that out of the changes that its use induces a condition may be brought about favourable to the occurrence of zoster.

Iodine produces erythema of the face sometimes, and local inflammation of course.

The friction of *croton oil* into the skin not unusually gives rise to an erythema of the face. I have been in the habit of using this topically and extensively for certain forms of dyspepsia, and I have often seen this erythema of the face symmetrical, lasting for a few days, with distinct heat, and this where there could have been no direct application of the remedy to the face.

Bromide of potassium may give rise to erythema and swelling of the nose; at least in one case this appeared to be its constant action, and, in the experience of those who have given the drug largely, an ecthymatous eruption; but this is probably due to its "lowering" or "liquefying" action, as in the case of *iodide of potassium*, which may induce purpura in a predisposed subject, and of course the erythema and other symptoms of iodism.

Belladonna produces a rash of rosy hue, fever, and a dry throat, with, of course, dilated pupils.

Copaiba, a rash well described by Judd in his work: a rosy erythema, of "pumiceous" aspect, as though the skin had been bitten by insects.

Arnica may produce erythema and swelling of the part to which it is applied.

Sulphur, in some cases, gives rise to a dry, red, dirty aspect of skin, with an attempt at the formation of vesicles, perhaps an artificial eczema, and subsequent pityriasis, accompanied by much itching; mistaken for the continuance or increase of the original diseases, mostly scabies, and demanding the most soothing treatment. The last case I saw was that of a gentleman who had had scabies; he was ordered a series of sulphur baths, which set up an artificial eczema, and ecthyma from the scratching, that rapidly got well (sooner than usual in these cases, for the sulphur impregnates the system) by demulcent baths and soothing unguents. Sulphur baths should be used with gentleness, and I think the old-fashioned villanous compound sulphur ointment less vigorously, for I feel sure that it is often continued long after the original scabies is cured, upon which the secondary effects, erroneously regarded as the thing to treat, depend. I have seen grevious errors committed from a want of attention to the facts I have pointed out.—*Lancet*, *April* 13, 1867, *p.* 454.

69.—ON THE TREATMENT OF VARIOUS SKIN DISEASES.

From the Medical Times Report of University College Hospital Practice.

Many very obstinate cases of prurigo of months' duration have been cured in a week by the use of an ointment consisting of half an ounce of olive oil, half an ounce of lard, and two drachms of the powder of Stavesacre; at the same time more frequent change of linen, and care in the washing of it in boiling water, are enjoined. Four-fifths of the cases of prurigo senilis are found to depend on the pediculus corporis, and should be called phthiriasis. It nearly always attacks the shoulders and neck first, and subsequently spreads to the trunk and lower extremities. It is not exclusively confined to old people. Mr. Balmanno Squire has recently insisted on the fact that prurigo is commonly due to the pediculus corporis. It will be found that the older writers were familiar with the fact. Rayer figures the pediculus by the side of his plate of prurigo. It is a great gain to know that so distressing a malady has a local cause, as this knowledge saves the patient from drugs and leads to a more speedy cure. Scabies is believed to be due solely and

exclusively to the presence of the acarus scabiei, one or more of which in nine cases of scabies out of ten which have not been submitted to treatment can be discovered at the end of the cuniculus. It is easily extracted on the end of a bent pin. The treatment is directed to the destruction of this parasite. Nothing is found so effectual as macerating the skin with soap and water, and the subsequent free inunction of simple sulphur ointment. If the cuticle is very thick and hard, a little carbonate of potash, one part in twelve of the ointment, is added with advantage. Other means of treating scabies have been tried, such as the solution of the sulphuret of calcium used in Belgium ; Hebra's ointment of sulphur, soft soap, huile de cade, chalk, and lard ; benzole ; solution of sulphate of zinc ; solution of iodide of potassium, and sulphur baths. None of these remedies are equal, Dr. Hillier believes, to the old-fashioned sulphur ointment.

For the treatment of ringworm (tinea tonsurans), a preparation composed of two drachms of iodine dissolved in an ounce of colourless oil of tar, is used with great success. It was first introduced by Dr. Coster, of Hanwell Central London Schools. This preparation is painted on the affected parts with a firm brush. It forms a cake, which separates at the end of a week or fortnight. It may require to be repeated once or twice, but not often more frequently. It causes little or no pain ; is not liable to cause abscesses or destruction of the hair follicles, such as often result from deep blistering. The oil of tar is obtained by distillation from the common tar, and has a specific gravity of ·853. Good diet and tonics or cod-liver oil promote the cure, but they are not essential.

For the cure of favus, epilation is assiduously resorted to, with the use of sulphurous acid lotion, or an ointment containing sulphur and white precipitate.

For the cure of alopecia areata (tinea decalvans) local stimulation with tincture of cantharides or tincture of iodine is mainly used, whilst arsenic is often given internally. This drug is also used in the treatment of psoriasis, chronic eczema, and pemphigus, and less frequently in lichen and lupus. In acute eczema and psoriasis, antimony is given in doses proportioned to the strength of the patient and the amount of local inflammation, as a preparation for an arsenical course. In chronic eczema, with much thickening of the cutis, strong solutions of potassa fusa are painted on the affected parts. When there is not much thickening and not much crusting, tar is applied locally, either undiluted or with equal parts of glycerine, as recommended by Hebra.

Some dermatologists forbid the use of soap almost entirely in skin diseases. Dr. Hillier rather encourages its use, except in acute eczema, pityriasis, and herpes.

He does not consider that the same diet is adapted for every case of skin disease. This requires to be regulated according to the constitution of the patient. He does not think that all cases of eczema in children are benefited by an extra quantity of meat in their diet, or that nearly all skin diseases are traceable to debility.

One of the most important things in treating a skin disease is to ascertain whether there is any syphilitic character in it. In this case, small doses of the bichloride of mercury are given with or without an excess of iodide of potassium. In tertiary syphilis, the iodide of potassium is given alone. If the patient is very cachectic, it may be preceded by the iodide of iron. For congenital syphilis, grey powder is usually preferred.—*Medical Times and Gazette, Jan.* 12, 1867, *p.* 34.

70.—ON PHENIC ACID IN SKIN DISEASES.

[Mr. William Harding of Percy Street, Bedford Square, writes as follows:]

I am very much inclined to think that the liquor carbonis detergens owes its therapeutic value to the presence of phenic acid; but that is not now a question.

As to the mode or manner of using the remedy, that must be decided by the particular case and the judgment or fancy of the practitioner. I am accustomed to have the parts fomented with hot water, dried and washed over with the phenic acid lotion, which is prepared for me by Mr. Cooper, of Oxford-street.

I am "very sceptical of the value of new remedies;" but the action of the phenic acid has certainly sometimes surprised me, and what adds to its value and beauty as a remedy is the celerity of its relieving agency.—*Lancet, Jan.* 5, 1867, *p.* 33.

71.—ON PORRIGO.

By Dr. T. W. Belcher, M.A., Physician to the Dublin Dispensary for Skin Diseases.

[The first case may be shortly described as a well developed one of porrigo, or favus, extending over a large part of the cranium, but being chiefly evident on the occipital hemisphere, the entire of which was covered by the disease.]

The treatment may be shortly given thus:—the scalp was first poulticed; the hair was cut off with a scissors as closely as possible; and the surface having been thus tolerably well cleaned, Hebra's tincture (described in my edition of Neligan, p. 114) was freely applied to it, and repeated poultices were superadded

up to the 26th of January, when the disease was evidently much better. Tincture of iodine, prepared with methylated spirit, was now applied occasionally; and cod-liver oil was taken in small doses until the 10th of February, when she was discharged cured. About two months after that date I saw her with a clean scalp, and a good, well-grown head of hair.

Case 2.—K. A., a girl aged 9, was admitted on the 14th of February, with the scalp affected much to the same extent as in the preceding case, from which however, it differed in some important particulars. The disease was of a much worse character, and was accompanied by vermin, with which the child's head was literally alive. In order to kill these, and to cure the disease, the scalp was well covered with Hebra's tincture, which at once accomplished the former purpose, and so clothed the scabs, that by diligent poulticing and the judicious use of the scissors the scalp was soon cleared off, and this was followed by the frequent application of the methylated tincture of iodine up to the 10th of March, when she was discharged cured. At the end of that month I saw her in as good condition as the preceding case. In this case the disease was said to have existed for six months previous to her first visit to me.

The *causes* of porrigo may be briefly noted. The disease is parasitic, but it requires a soil favourable for its production. This it finds in dirty, scrofulous, ill-fed children, among whom it nearly always occurs. In them it is not always confined to the scalp, and in some instances, when long continued, the patient gets an idiotic expression of countenance, and in fact the mental powers are more or less affected by it.

In one of the cases here noted pediculi were numerous. This occurs frequently in those who have a complication of this disease with a species of impetigo, or psydracious pustule; and the pediculi are mostly confined to the occipital hemisphere.

Diagnosis.—Porrigo has been confounded with neglected chronic eczema; and according to Hardy, with impetigo, herpes tonsurans, porrigo decalvans, pityriasis, and psoriasis. From all these, however, a minute examination will distinguish the genuine disease, by detecting the presence of the favus, the honeycomb-shaped cup or *godet* of the French.

Prognosis.—This is a disease of serious import, not that it tends to shorten life, but its most unsightly aspect and contagious nature make it to be greatly dreaded, to say nothing of its effect on the intellect in long-continued cases. Besides, the hair follicles get destroyed, and permanent baldness is often the result. It is, however, very often cured.

Treatment.—The first thing to be done is to destroy the parasite, next to prevent its reproduction, and to this end constitutional as well as local remedies are specially adapted.

In the cases here noted I have indicated what I consider the best mode of treatment, but I would not thence have it imagined that the many other modes pursued are useless. Various modes have been resorted to to remove the parasite and the results of the disease. Among these I may shortly note the barbarous application called the pitch-cap and the process of depilation. The former was nothing more than closely fitting a pitch-cap to the patient's head, and then tearing off the hair with it. The barbarity of this practice was such that death has been known to result from it. I have seen a pitch-cap which was used in a case of porrigo, and I should never like to see one again. The process of depilation has been undoubtedly successful with some practitioners, but where it *can* be avoided it needs no argument to prove that it *ought* to be avoided.

The plan which I adopted in the two cases at the head of this paper combines, in my opinion, the advantages of the pitch-cap and depilation, without the shocking and cruel barbarity of the former.

With regard to depilation, I can easily conceive cases where it might be manifestly the proper mode of treatment, for in no class of diseases is special treatment for each case of more importance than in diseases of the skin. Even where two cases may be apparently similar in all respects, the treatment which may prove successful in the one may not only not be of any use in the other, but may bring the practitioner into positive disrepute with the patient's friends if unduly persevered in. Thus in two similar cases requiring constitutional treatment, arsenic alone may serve the one, and continually nauseate and half poison the other; while arsenic with quina may completely cure the second, and do no good, but rather mischief, to the first.—*Medical Press and Circular, Dec.* 5, 1866, *p.* 574.

72.—ON THE ETIOLOGY OF ECZEMA.

Dr. Frank Smith, of Sheffield, has recently made some very important observations in reference to the etiology of eczema in its relation to some disorder of the renal function, as shown by the presence of indican in the urine. In nine out of ten cases Dr. Smith has detected indican in pathological quantities. Indican is supposed to be due to a retardation of the process of declension from the complex to the more simple of the products of function and secretion. Its own highly complex formula is a strong evidence in favour of this opinion, in addition to the ease with which it is broken up into leucine, indigo, and glucine. Dr. Smith suggests that this retardation is due to accumulation of urea and other products of waste in the blood, owing to deficient renal secretion; for he has detected urea in considerable

amount in the serum of eczematous patients. Indican occurs in the urine in the reaction stage of cholera and in Bright's disease. The spectrum of the solution prepared from the urine for the detection of indican is the same as that of common indigo. These observations are exceedingly important and suggestive.—*Lancet, Feb.* 2, 1867, *p.* 156.

73.—ON REMOVAL OF NÆVUS BY ENUCLEATION.

By T. Pridgin Teale, Jun. Esq., Leeds.

[The following paper is an abstract of one read before the Royal Medical and Chirurgical Society.]

In this paper the author advocated two principles which have received as yet little attention from surgical writers in the treatment of the more formidable cases of nævus. The first is, that there exists in most cases of large nævus a distinct capsule, which will enable the surgeon to enucleate the tumour without cutting wide of the disease, and thereby endangering large blood-vessels or nerves. This principle is advanced by Mr. Paget in Holmes' "System of Surgery," vol. i., page 498. In support of it three cases are here related, in which the author, relying upon enucleation, had removed large and rapidly-increasing subcutaneous nævi in infants.

Case 1. — Emily R., aged 4 months. A rapidly-growing nævus, measuring three inches by four, situated over the right parotid gland, being chiefly subcutaneous, but involving the skin near the lobe of the ear, to the size of half a crown, removed by enucleation, October 1863, the nævoid skin being preserved, along with the sound skin, as a cover to the wound. The knife was kept close to the investing capsule, and was used very sparingly in separating the deep parts of the tumour, which extended to such a depth that half an inch of the internal jugular vein was laid bare, and the finger could be placed upon the styloid process. Rapid recovery. Photographs of the tumour, and of the patient two years after operation, were exhibited, as well as the tumour itself.

Case 2.—Alice B., aged 7 months. A rapidly-growing nævus, entirely subcutaneous, and measuring before removal four inches by three inches and a half, was situated over the left parotid gland. Removal by enucleation, January, 1865, the margin and deep surface being separated almost without using the knife. The infant returned home in ten days convalescent. A few days after its return home it was seized with malignant scarlet fever, and died. A photograph and a preparation of the tumour were shown.

Case 3.—Mary R., aged 5 months. A nævus of the size of a walnut, chiefly subcutaneous, and situated over the right parotid gland, was removed in March, 1864. On the fifth day the infant died in a fit of laryngismus stridulus, to which it had been liable for some weeks before the operation. Tumour shown.

The second principle advocated in this paper is—that when a portion of skin covering a nævus is involved in the disease it is not necessary to sacrifice such diseased skin, as it may be dissected off the tumour, and, being retained as a cover to the wound, will gradually regain its natural appearance. This slow change is brought about by the gradual contraction of the internal cicatrix, by which the nævoid skin becomes united to the wound which it covers. It is an instance of the surgical value of the designed production of atrophy by means of cicatrix, a subject on which the author has collected many interesting facts, which he hopes before long to bring before the profession. This principle was acted upon in Case 1 in October, 1863, and in the summer of 1864 the preserved nævoid skin had recovered its natural appearance. Recently Mr. Nunn and Mr. Furneaux Jordan have carried out the same principle successfully in the treatment of nævus of the face.—*Medical Times and Gazette, March* 9, 1867, *p.* 264.

74.—ON OPERATION FOR NÆVUS.

By Furneaux Jordan, Esq., Birmingham.

Where the skin is not greatly or at all implicated, I make an incision through it, and completely through the nævus—dividing it into two halves. Hemorrhage is easily arrested by pressure at one or more points within or external to the incision; then each half of the tumour is cut out piecemeal with curved scissors. The partially-implicated skin will in time become natural. The cure is effectual and rapid. I have found it to succeed when all other means have failed. The cicatrix of the single incision soon becomes almost imperceptible.—*Lancet, Dec.* 1, 1866, *p.* 618.

SYPHILITIC AFFECTIONS.

75.—ON SYPHILIS.

By Dr. Samuel Wilks, Physician to, and Lecturer on Medicine at Guy's Hospital.

[In the following article, which is an epitome of a lecture delivered at Guy's Hospital by Dr. Wilks, syphilis is only

considered in the light of a constitutional affection. It is of the utmost importance that it should be so regarded, for the neglect of so doing has been the main cause of the obscurity which has so long surrounded it. The disease is not necessarily venereal in its nature, nor is it always local in its origin.]

The virus of the disease may be introduced into the system without any affection of the genital organs, and without sexual intercourse, and, indeed, without any primary lesion whatever. I believe that any obscurity which has hung over the disease has been due to this erroneous way of regarding it, and which still seems to veil the truth from many. We shall see that syphilis, being a constitutional disease, is introduced into the system by a virus; but this by no means need be gathered from sexual intercourse: it need not be introduced through the genital organs, nor by any sore at all. At the same time it must be remembered that there are probably many local affections having irritating discharges which are highly contagious, and yet do not contain any virus which is capable of contaminating the whole system. I have seen an impetiginous sore on one person produce a similar sore on another; but how absurd would it be to confound this with a constitutional affection, and style both by the same name.

I say for a long period all contagious sores found on the genital organs were styled venereal; but it is evident that many of them were simply local in their character, whilst one alone contained a poison which was eminently virulent. Syphilis is a disease *sui generis;* it is just as peculiar in its symptoms and results as is scarlatina or small-pox. It has like them its incubation, its febrile disturbance, its eruptions, and sequelæ.

Syphilis, having generally a primary local lesion, was regarded too frequently as a simple external disease. I am aware that so-called secondary symptoms were observed, but this was not sufficient to compel practitioners to separate syphilis from simple sexual affections. Indeed, when the matter was considered at all, it was declared that the secretions and blood of the syphilitic patient were not contagious. Be careful, then, not to be led into the error of treating syphilis from a purely surgical point of view, as is sometimes heard in the question as to the best applications to the sore, as if the sole object was to heal it up, without any regard to the virus which is being absorbed. To consider the one without the other may be as absurd as the consideration of the best method of healing a bite given by a dog which is affected with rabies. With syphilis, how to treat the chancre has been a subject by far too long exclusively considered.

Now, in speaking of other specific diseases, you may remember that there were certain leading features in them which engaged our attention. By "specific" diseases I intend those which in no way depend upon the slow changes in the tissues brought about by long-continued causes, and which constitute the great bulk of all diseases which come before us, but I allude to morbid conditions of an altogether different kind, and set up in the most healthy person through the introduction into his blood of a virus taken from another who is suffering from the disease. A process is supposed to be set up in the blood, which has been regarded as fermentative, and thus called zymotic; that a definite period is required for the change; that certain phenomena ensue, and the process then ceases (some think by the elimination of the poison), leaving the subject as well as before. After the poison enters the system, a certain period elapses, in which no outward sign of its presence is seen; this is called by the nurses the "breeding time;" by us the "hatching time," or the incubation; then the febrile symptoms appear, attended by a disturbance of the skin and mucous membranes, and it is especially by the altered appearance of the skin that the differences of the specific diseases are characterised.

As regards the disease now under consideration, the first thing to inquire is as to the mode of introduction of the syphilitic virus into the system, the changes which then occur, and the incubation. Of course the poisonous matter from a so-called primary sore can be conveyed to another person; but one question which was asked by the Venereal Committee (of which I was a member) of the witnesses was, whether an excoriation was necessary for its introduction. There were those who thought this was necessary, and that in all probability, a breach of surface took place on the mucous membrane, through which the virus was taken up. Other witnesses said that, there being an absence of all proof of this, they had no reason to believe otherwise than that the virus might enter the follicles, and be absorbed by lymphatics or veins. It seemed, however, to be believed by a third and large party that both doctrines were admissible—that although a raw surface would allow more readily of absorption, yet that the application of an irritant virus to the sound skin or mucous membrane would in time so alter the epithelial surface that absorption would then readily take place. This conviction was founded upon what is observed when various medicaments such as aconite or belladonna, are applied to the skin; besides there were the positive experiments of Ricord, who showed that although a long time might elapse, yet that the virus would act eventually on a healthy skin, after having, of course, completely sodden the epithelial covering. If experiments be made with the virus, what mostly happens is

the following: that, as in vaccination, the puncture heals; soon a papule appears, which is surrounded by a hardening, producing a lump or button, which is almost characteristic of the disease. This process generally takes three or four weeks or more; the average time is a month. When the patient first perceives a sore, he has already had the poison within him for a month. You may remark that the longer a specific disease is developing, the longer is its whole duration, as well as the various stages, including the onset of the fever and that of the rash. A disorder like scarlatina, which runs a very rapid course, has a short incubation and a rapid fever stage, the rash appearing after twenty-four hours' illness. In small-pox the fever stage is longer before the rash, so also in typhus; whilst in typhoid, a disease of longer duration, the pre-exanthematous stage is more protracted. In syphilis, a disease which continues over a long period of time, the incubation is slow, as well as the stage preceding the efflorescence. Dr. Marston, of the Artillery, has stated that the soldiers very generally said that a month had elapsed since intercourse before they observed the sore; in one case he had known fifty-six days to elapse.

The mode of introduction of the virus and the effects produced are of the highest importance and of great interest, both practically and pathologically. The true or characteristic chancre is that where an induration occurs around the chancre, and the neighbouring glands are involved; but we know that this is by no means necessarily the case; that soldiers and sailors (and this is the experience of all medical men) will occasionally draw attention to secondary symptoms who exhibit no evidence of a local sore, or, perhaps, merely a cicatrix or a papule, but attended generally with indurated inguinal glands. Such cases do occur, I say, but they are exceptional.

In corroboration of some of these views, not drawn from books, but from the mouths of living witnesses, it was said by Dr. Beith that the virus might enter through the cuticle without abrasion; Dr. Blenkins, of the Guards, believed the virus might be absorbed by the follicles. Dr. Frazer, who had had a very large experience in India, had seen sores heal at once; or, perhaps, there was a mere scratch, which healed immediately, but was followed by the usual secondaries. In cases which followed supposed gonorrhœa, he believed there was a crack or sore which had been healed. It was for this reason that he relied more on the induration of the gland as a diagnostic mark than upon the character of the chancre. Mr. Samuel Lane, also, had seen the constitutional affection where the only local sign of disease was a little excoriation, and which, healing up in a few days, left no sore and no induration. This would be somewhat analogous to the case of hydrophobia

succeeding to the bite of a dog which was little more than a scratch, and which had soon healed.

Now, I have first mentioned these facts to show that the virus of syphilis may be introduced into the system through the most trifling abrasion, and leaving at the spot no trace behind. Such cases, however, are exceptional, since the induration is generally observed at the point of introduction of the virus, and which condition is intimately related to the further development of the disease. The great peculiarity of the syphilitic process is seen in this disposition to the production of lymph or fibro-plastic material, which may in extreme cases of disease, as we shall presently see, find a nidus wherever connective tissue naturally exists—that is, in every part of the body. The first indication of this is seen in the chancre itself. There can be no doubt, although authorities differ as to its absolute necessary presence, that induration is the great characteristic mark of the true syphilitic or Hunterian chancre. It may be admitted that it is sometimes wanting; but the well-marked mass of indurated tissue which is sometimes seen on the prepuce, much like an everted eyelid, is too striking a fact to be overlooked. Herein, indeed, lies the first evidence of the true nature of the disease; but mark the fact, that although this is called a chancre, thus implying the existence of a sore, yet no ulcer need exist. The surface merely secretes an ichor; but there is no pus, nor, in fact, is the mucous membrane over it absolutely destroyed. If a sore does exist, it is generally an after occurrence; it is no necessary part of the syphilitic process. Babington, the commentator of Hunter, says the character of the primitive venereal affection is essentially an induration passing afterwards into ulceration. Well, then, this indurating process goes on for three or four weeks after the introduction of the virus, subsequently an induration of the glands in the groin ensues, and then follow the constitutional or secondary symptoms.

Before, however, proceeding further, and leaving the subject of primary sore and contagion, I had better here allude to another probable mode of contracting the disease—that is, from a person in whom the affection is already developed, or who has the secondary symptoms, the primary having long disappeared. The prevailing opinion has been, that contagion could only occur from the primary sore—that is, for the first three or four weeks of syphilis; and when this had healed no longer was contagion to be feared. There is, however, at the present day, a large mass of evidence to show that the constitutional disease is contagious. For instance, there are a great many prostitutes plying their trade in whom there is no existence of a sore, and yet these women are largely propagating the disease. Theoretically, you would suppose that although the primary sore had

healed, yet, as the poison was still working its effects on the constitution, that it could be communicable to others ; Hunter thought so, but failed to prove it. Experiments have been made which prove positively that the blood and some of the secretions are poisonous in the secondary or constitutional disease. Diday speaks of the frightful ravages of syphilis in a country village, introduced by a syphilitic infant, and propagated by the nurse ; but I think I cannot do better than quote the opinions of witnesses from whom I have heard the facts orally. First, there was a surgeon who accidentally cut his finger whilst operating on a man suffering from secondary symptoms, and who himself, in consequence, took the disease. This surgeon gave it as his opinion that women go on infecting men long after the primary sore has healed. Dr. Marston believed, also, that the discharges of syphilitic women were contagious. Of the same opinion were Mr. Erichsen and Mr. Samuel Lane, Mr. James Lane, and Mr. Gascoyen, of the Lock Hospital. Mr. Langston Parker had no doubt that the discharges of women produced the disease in the other sex ; but he stated, still more, his belief that they would produce sores of an indurated kind. He had seen constitutional symptoms thus conveyed, just as from men to women by means of the seminal fluid. Mr. Lee described some time ago, in the Lancet, how a gentleman came to him with a chancre, saying it was impossible he could have syphilis, as he only knew one woman, who was free from disease. She underwent an examination, and the mucous membrane was found healthy, although she had a discharge. On examining the chest a syphilitic rash was seen. Mr. Lee opined that from long intercourse this gentleman had not been infected, until, from some local irritation on the parts of generation, a secretion was formed which was inoculable. In the same journal there was circumstantially related the case of a man labouring under secondary syphilis, and having a sore on his lip, biting another man, and conveying to him the disease. So much for the secretions ; but the blood itself is poisonous, or it may be that herein lies the virus.

In a work lately published by Lancereaux, there is a narrative of a case of inoculation by the blood on a medical man who voluntarily submitted to the experiment. The champion (to adopt the author's expression) was an Italian physician, Dr. Bargioni. The patient who afforded the material for experiment was a woman, aged twenty-five, the subject of well-marked constitutional syphilis. Her arm was washed clean, and no eruption existed on that part. The cephalic vein was opened, and some blood was drawn ; lint was dipped in it, and applied to the arm of M. Bargioni, in which three incisions had been made just below the insertion of the deltoid. In twenty-four

hours the lint was removed. In four days all trace of the inoculation was gone. After a few days he noticed an itching, and on looking at the arm there was observed a round papule of a red colour, but no induration around it. The papule gradually increased, and in eight days was of some size, and covered with a silvery scale. Eleven days after its first appearance, two glands in the axilla became enlarged. On the sixteenth day these glands were larger; and on removing the scab from the papule, a small quantity of serosity was found beneath, but no induration around it. On the eighteenth day there was an ulcerated surface with a crust on it, and a certain amount of hardness at its borders. On the twenty-third, it was larger and harder, as were also the glands. A month after the first appearance of the papule he had nocturnal pains in the head, and observed some enlargement of the cervical glands. A week after this a roseolous rash appeared on the body, and spread all over him, leaving no doubt as to its nature. In another week the sore was not yet disposed to heal, and the glands were larger. The rash then became copper-coloured. Mercury was given, and the sore began to heal.

There can be no doubt, then, of the fact of the blood of a syphilitic patient being poisonous, and capable of conveying the disease to another person. The experiment has now been more than once unfortunately and unwittingly tried in the case of transmission of syphilis during the operation of vaccination. I am not aware of any experiments having been made with the blood of a patient who had only the so-called primary disease. Knowing the fact, all we want to ascertain now is the frequency of the propagation of the disease by means of the blood or certain secretions, so as to speak with certainty as to the propriety of including women suffering from secondary symptoms amongst those who are now arrested under the recent Act of Parliament.

Supposing then that the virus from a depraved secretion or blood of a person suffering from secondaries has entered a particular part of the body, what change is there locally produced? Now I am sorry to say our facts are scanty as regards this matter, and few of our witnesses at the Commission could give me much information. In the case of the Italian physician just mentioned, you see there was no marked indurated sore, and thus it is possible that the virus from the two different stages of the complaint may produce different local effects. Diday maintains that syphilis may be propagated either from primary or secondary, and that the latter contains a less virulent poison. It is syphilis in a milder form; but we have heard Mr. Langston Parker declare that he has seen an indurated primary chancre arise from a secondary source. There cannot

however, be left out of the question the seat of the primary lesion, which appears to have somewhat to do with its character, seeing that indurated chancre is comparatively uncommon in women.

In considering the syphilitic constitution, the *liver* must retain its pre-eminence, both as the organ most commonly affected and the one in which an alteration was first discovered in connexion with the disease. It may be remarked too that hepatic disturbance and jaundice have been noticed in the course of syphilis by many of the more ancient writers. There are *three* varieties of the syphilitic liver: the first, that in which the whole organ has become infiltrated by a new fibre-tissue, producing a uniform and general hardening; the second, in which the presence of the new material in the course of the portal vessels has produced a contraction like that of cirrhosis; and the third and most striking form, where the organ is pervaded by distinct nodules of the new formation. The *first* variety has mostly been observed in children who have died of hereditary syphilis, the organ being large and intensely hard, all natural structure having disappeared to the naked eye, and the microscope showing the organ pervaded throughout by the adventitious material. The *second* form is constantly seen in those bodies which are tainted by syphilis, and is often found associated with the lardaceous degeneration. Inasmuch as the patient may have been intemperate in drink, the change may have been wrongly attributable to alcohol. In many cases, however, judging from the history of the case, and the morbid appearances found elsewhere, I have been pretty confident that syphilis was the origin of the disease. It may go on, like alcoholic cirrhosis, to produce dropsy, as was seen in a man lately in the hospital, and who required to be tapped several times before his death. The *third* form shows the most characteristic changes, and those which are generally pointed out as evidence of the presence of syphilis. Here are seen distinct nodules scattered through the substance of the organ, sometimes as small as peas, and at other times as large as walnuts. These after a time become dried up, and then form tolerably circumscribed masses; but the neighbouring tissue is often infiltrated, and then they send out long processes into the neighbouring hepatic tissue. When near the surface they shrink up the tissue, causing deep cicatrices, so that we may constantly meet with a liver much altered in shape, or apparently lobulated, from the effects of syphilis which had occurred several years previously.

The *brain* is an organ which is perhaps not quite so often affected as the liver; but owing to any disturbance within it at once becoming manifest and productive of symptoms, its alterations by syphilis are infinitely more important; some of the

worst forms of epilepsy, and most fatal, being assignable to this cause. Observations have hitherto shown that the membranes and surface are more liable to disease than the substance, unless indeed various affections of the cerebral tissue, which have hitherto been ascribed to other causes, have their origin in venereal disease. As regards the membranes, the before-named syphilitic deposit may be found on the external surface of the dura mater in connexion with the bone, and at the same time on the internal surface in connexion with the convolutions. The latter may be altogether independent, as it is the more important. It is seen as a patch of indurated lymph on the inner surface of the dura mater, whereby the membranes and brain become closely adherent. The cineritious structure is involved, and perhaps a portion of the medullary. This is the most common and striking form of disease produced by syphilis, and the one which is generally found in connexion with epilepsy and some other well-marked cerebral diseases. As regards the brain proper, I have only once or twice seen distinct deposits within its structure. These were small, and scattered through the cineritious portion. It is probable, however, that many of the so-called fibrous tumours may have been syphilitic, and also that some instances of softening may have been due to the breaking up of similar deposits. Softening of the brain, however, may occur from syphilis in another way, simply from deranged nutrition, owing to disease in the bloodvessels. It has been shown that in several cases changes have occurred in the arteries by a fibroid thickening in their walls, exactly of the same nature as is observed in other structures of the body. The consequence is a ramollissement of the cerebral substance.

The *spinal cord and nerves* may be affected by syphilitic disease. The nerves may have syphilitic tumours upon them, producing the peculiar affections which the loss of function of those nerves would necessarily bring about. In one case a spinal nerve was affected, and productive for some time of neuralgia; but as the deposit increased, the cord became involved, and a fatal paraplegia ensued.

We next come to the *lungs*. It is possible, and indeed highly probable, that these organs are very often seriously affected by syphilis, and that much of the so-called phthisis which occurs in persons of intemperate and debauched habits has had its origin in syphilis. As in other organs, the syphilitic affection may occur under two forms, the nodular or the diffused.

[In the *testis* syphilitic deposits occur as distinct nodules, or a fibrous structure may be seen running through the parenchyma in connection with the tunica albuginea.]

In the same manner the *mamma* may be affected. I have not much personal experience of this, but it seems that the female breast may be affected in three ways. One variety of the affection is that in which a mass of indurated tissue is associated with an ulceration of the integument; another in which distinct masses are found in the gland; and a third in which the new material is diffused through it, constituting a syphilitic mastitis.

The *muscular system* was a part of the body always known to be affected by this disease, inasmuch as the tongue is a muscular organ, and nodules in its substance have been remarked by the earliest writers. The same may be observed of the muscles of the limbs, and thus hard lumps of fibroid tissue are not unfrequently met with in the forearms and legs.

The *bones* are constantly affected, as you know. In the first stage of syphilis, we speak of periostitis affecting especially the tibia, forming a painful node, which is again absorbed by appropriate remedies, there being no disposition to the formation of pus. Remark that there is no great distinction between ostitis and periostitis. The vessels of the periosteum throw out lymph, and thus it may be found in abundance beneath this membrane; but it may also be found filling the canaliculi of the bone. If this be not absorbed, an induration or actual ossification takes place, and the bone becomes permanently enlarged. It is only under peculiar circumstances, from a low state of health, protracted use of mercury, or from an ulcer forming on the skin, that a softening process may take place, and caries result. On the flat bones, as the skull, a process goes on in the bone which much resembles what is seen on the soft tissues, as skin or mucous membrane; the carious surface or ulcer having raised edges, with a puckering of the tissue around. Virchow has made this a study, and has styled it dry caries, and of which you may see many specimens in our museum. There are star-like spots and linear cicatrices on the bone. Where a portion of superficial plate has been removed, a deposition of new bone has occurred around, so that the surface looks puckered and raised. It has a worm-eaten appearance, with dentated edges, and on the skull before me you see the star-shaped cicatrices.

How far in a pregnant woman the structures connected with the nourishment of the *fœtus* may suffer from the effects of syphilis has not yet been determined with scientific accuracy. The still-births and the abortions by women affected by this disease are too common to require notice. But in these instances the cause is in the fœtus itself; it is diseased, dies in utero, and is thrown off. But miscarriages are by no means infrequent in tainted women, even when the fœtus itself shows no signs of disease. In such cases it has been conjectured that the *placenta* has been specifically affected, and in illustration I can point you

to specimens where this organ contained deposits of a supposed syphilitic nature. In corroboration of this, Dr. Barnes informed us at the Venereal Committee that syphilis produced a diseased condition of the mucous membrane of the uterus, and thus gave rise to abortion. There was a chronic inflammation of the mucous membrane which went to form the decidua, and the placenta which arose from this being the organ through which the fœtus received its nourishment, the latter naturally perished.

The effects of *hereditary* syphilis on the system are somewhat different from those which I have described when the disease is acquired. Children who are born syphilitic are recognised by their impoverished look and by the morbid condition of the skin. On post-mortem examination the liver may be found indurated, the lungs the subect of lobular pneumonia, and a peritonitis may exist, as first pointed out by Sir J. Simpson.

When less severely affected, syphilitic children do not exhibit traces of the disease until some weeks after birth, when a roseolous or lichenous rash appears, accompanied by snuffles, ulceration about the mouth, condylomata, &c., and perhaps some inflammation of the structures of the eye.

In about a twelvemonth these children got well, and until quite lately were supposed to be then altogether free of the syphilitic taint. It was supposed that hereditary syphilis was a purely infantile disorder, and that all traces of it disappeared after the period just named. It has, however, been shown by the long-continued and very accurate observations of Mr. Hutchinson that the disease by no means ends here, but after a few years its effects may again be witnessed, in a manner which has just been described to you, in the tertiary stages of the acquired disease, but still possessing some peculiarities. The novelty of the observations consists in the fact that a person may be suffering from the effects of hereditary syphilis in adult age, and at a period when it is possible he may acquire the disease for himself. In such cases, however, not only are the morbid processes seen in action, but the effects of those which occurred in childhood have left their indelible traces on the countenance. Thus, in a young person, say at the age of puberty, a syphilitic action may be found still proceeding, although engendered at birth; and the subject very often exhibits the hereditary taint in his person. He is often puny or ill-developed, as was seen in two young men who were lately in the hospital; although in a girl who evidently was the subject of hereditary syphilis the general conformation was good. These puny lads had the configuration which Mr. Hutchinson has so well described. There was the protuberant forehead, indicative of the ventricular effusion which had occurred in infancy; the peculiar flattening of the nose, induced by the inflammation

of the mucous membrane and periosteum; the puckering around the mouth, from cicatrization of former ulceration; and, above all, the peculiarities presented by the teeth. Owing to the pulps of the permanent teeth having been involved in the inflammation at an early period of childhood, the formation of the teeth becomes altered, seen especially in the incisors; these are dwarfed, rounded, narrowed, and notched. With regard to the teeth, you are no doubt aware that much scepticism exists as to the correctness of the observations that have been made, and therefore I may remark that, having had my attention early drawn to the subject by Mr. Hutchinson, I have taken many opportunities of testing its truth, and I have not the slightest hesitation in giving my adhesion to his views in every particular. Not uncommonly the shafts of the bones are found of inordinate size, from the chronic induration which has been for many years in progress. Besides these marked effects of former morbid processes, we may find that the fire is still burning, that ulcerations may occur in the throat, that a fresh periostitis may break out, and at the same time an affection of the eye which appears to be peculiar to this form of hereditary syphilis. It is seldom seen before the fifth year, and consists of a cloudiness coming over the eye, due to an infiltration of the cornea with lymph, and which is technically styled "interstitial keratitis." Sometimes also the patient may be deaf. At a later stage these patients come before us with dropsy and albuminuria, and we find they are the subjects of the lardaceous disease before mentioned.

Now I would have ended my subject here, and not touched on the question of *remedies*, had they not thrown further light upon the nature of syphilis. I have already said that syphilis is a specific contagious disease, and that in not a single example of the class to which it belongs have we any knowledge of a remedy properly so called. Each runs its course, be it typhus, small-pox, or cattle plague. As regards syphilis, the only remedies which have ever been regarded in the light of curative agents have been mercury and iodide of potassium; and most men of experience are agreed that these remedies do have a most marked effect in removing certain venereal symptoms, and in producing for a time an apparent cure. At one time, no doubt, mercury was looked upon in the light of an antidote; but, from a better knowledge of its action, its influence appears to be exerted merely on the general secreting apparatus of the body, and so, by promoting absorption, assists in getting rid of many of the morbid results of syphilis. Similar effects of the drug are seen in the removal of a bronchocele, enlargement of a lymphatic gland, or a pleuritic effusion. Iodine and potash have also analogous effects. When, therefore, a node is removed

from a bone, it is probable that an absorption of the new material takes place, but that the drug administered has no influence over the cause producing it; thus it is that after a short time a relapse takes place, and the same symptom occurs again. It would seem, then, that our best remedies—as those just named—have no influence over syphilis itself, but only over its effects. A practical lesson here follows, which I have often adopted with the best success: instead of considering that mercury is a remedy for the earlier stages, and that at a later period tonics are required this drug may be found useful even when the cachectic condition of the patient would have rather contraindicated it. I have several times witnessed the good effects of more active treatment in patients whose condition had suggested merely wine, quinine, cod-liver oil, and suchlike remedies, but where a true syphilitic action was still in operation.

The witnesses on our committee, with few exceptions, were mostly of opinion that mercury was a valuable remedy, but not curative, of syphilis. It might modify results, but not prevent them. Such opinion is probably now generally held. Thus Ricord says: "Le mercure fait disparaître les manifestations actuelles; il ne neutralise pas la diathèse." And Welbank before him: "Mercury antagonises the influence excited by the syphilitic virus; but is no specific antidote to the virus itself, which must be gradually modified or eliminated by the system at large." I may now add, that Hunter held the same views. It is very remarkable how Hunter appears to have been misunderstood in this matter. He is often quoted as an advocate for the extensive use of mercury as a specific remedy. He uses merely the term specific in the sense of its having an influence over the disease in an unknown manner; but he labours hard to show that the drug in no way removes the cause, whilst it for a time influences the effects. I cannot but think that the obscurity of his language was caused by the very comprehensive grasp which he took of the subject, and which was consequently not appreciated by many of his readers. The very expressions which Hunter used clearly show, I think, not only his correct view of the whole subject of syphilis, but how he has anticipated the doctrines of the present day.

I cannot dismiss the subject of mercury without making reference to an opinion often expressed, that many of the results attributed to syphilis are really due to mercury; and in illustration those wretched examples of tertiary disease are pointed at, with necrosis of bones and other organic affections, and who very frequently have taken much of this drug. Now, in order to decide to which the effect is due when two causes are in operation, it is necessary to watch the operations of each singly. In the first place, it has been proved over and over again that

every effect which has ever been attributed to syphilis has been observed where not a particle of mercury has been taken; and in the second place, in those who are poisoned by mercury the peculiar and characteristic effects of syphilis are never seen. Moreover, a consideration of the operation of the two substances, the syphilitic virus and mercury, upon the body, will remind us that the effects are not only different, but opposed or antagonistic. The one is disposed to cause the formation of a fibro-plastic matter, the other to absorb it; the syphilitic is a formative process, the mercurial is a destructive one. If, then, it be stated by men of experience that the worst forms of disease are those where mercury has been given, it can be explained only on the supposition that the remedy was never needed or was given in excess. If, for example, mercury has caused the absorption of lymph in a bone, and still be continued, a disintegration of tissue might commence, and mercury be justly accused as the fomentor of the process; but this is a very different thing from declaring that mercury can originate a disease of the bone, much less a thickening or hypertrophy, a result which is the very opposite to that which would be expected from this mineral. As many surgeons in the public service have treated syphilis without mercury, they could speak authoritatively upon this matter; thus Dr. Beith and Dr. Hardie, and some others, stated that they had frequently witnessed tertiary affections and disease of the bone where no mercury had been given.

Now one word on "syphilisation," as being a subject bearing on the nature of the disease. You know that Prof. Boeck, of Christiania, states that for many years past he has been in the habit of inoculating persons suffering from constitutional syphilis with the venereal matter, and that after so many weeks of the practice the matter ceases to "take," and the patient is well. During the process the whole of the syphilitic symptoms disappear. He also states that the cure is much retarded if the patient has taken mercury. I have read his work, in which he details a large number of cases in the most systematic manner, and I cannot but believe in their truthfulness. The Professor does not theorise much on his system, but he seems to think that the poison is thoroughly eliminated by the means adopted. I apprehend his opinion to be that, a virus having entered the system, it must produce its regular "fermentative" changes before the patient can be pronounced free of it, and therefore that every remedy which shall only temporarily retard its operations is valueless, and that a method is to be adopted which shall soonest eradicate it from the system. If this be Dr. Boeck's opinion, it would be analogous to a case of smallpox which should suddenly stop in the middle of its course, either spontaneously or from the action of medicine; under these circum-

stances our efforts would be directed, not to stay the disease, but to assist in its completion. When, therefore, in the case of syphilis, mercury is given, although it may arrest the disease for a time, it does not cure it; and thus, if the latter is still obstinate, and not disposed to finish off by itself, the method would be to continue inoculating the person with fresh matter until all the stages were complete. This, Dr. Boeck says, he does for three or four months, and the patient is well. If his statement be correct about the retarding influence of mercury, it is a further corroboration of the effects of this drug over the disease.

A principal objection to such theory by some is, that the Professor does not inoculate with the syphilitic virus at all. As I told you, it is the most difficult process to obtain any secretion from an indurated chancre which will inoculate. If you refer to the work of Langston Parker you will there see quoted the various trials of inoculation by different experimenters, and their almost complete failure. Mr. Lee, our home authority, says syphilitic inoculation does not produce a pustule; the disease which infects a patient's constitution begins as an abrasion, pimple, or tubercle. A true chancre does not produce pus, or at least not until irritated. When, therefore, I tell you that Boeck inoculated with purulent matter, it is denied that he used the syphilitic virus at all; his matter, indeed, was obtained from other pustules, from soft sores, from chancres which had been irritated by ointments, and, in some of the cases related by Bidenkap, from matter which ran from the prepuce in cases of phimosis, the character of the sore being unknown. The answer to this by Boeck is simple enough: that he believes the purulent matter under these circumstances does contain the syphilitic virus; in fact, he believes that the local or soft sore contains the same poison. Those, however, who object to this, and who still believe the Professor's statements as to the cures, explain his facts by supposing that the pustules produced on the skin act by an eliminative process, and so assist in getting rid of the peccant matters from the system; and in corroboration of these views it is stated that other irritants have produced like cures—as, for example, tartar emetic. Dr. Boeck himself has used these methods, and admits that a cure of the secondary symptoms took place.

Another element of difficulty, however, is here introduced; for if the irritant used be not of a specific nature, as asserted, tending to render the body insusceptible of the virus for the future, and yet after a time fails to produce the usual effects on the skin, it is evident that some other cause for the result must be in operation. It has therefore been stated that the skin becomes proof against a particular kind of irritation if that be long continued. This explanation, however, throws no light

upon the fact of the symptoms disappearing and the patient being cured, which is, after all, the fact of practical import. It is not for this reason, however, that I have broached the subject, but rather because the facts elicited do seem to corroborate the idea of the pustular eruption being a final and eliminative mode of getting rid of the disease.—*Lancet, Jan.* 26 *and Feb.* 9, 1867, *pp.* 105, 167.

76.—ON SYPHILISATION.

By Henry Lee, Esq.

[In a preceding number of the Medical Times and Gazette to that from which the following is taken a short account is given of a very interesting experiment.]

A patient, who was supposed to be "thoroughly syphilised," was inoculated with some matter from a spreading sore. The consequence was that each of the inoculated points took on a similar action to that of the sore from which the inoculated matter was taken.

We have here direct experimental proof of a fact which has long been maintained by myself and others—namely, that immunity to one kind of syphilitic matter does not necessarily protect a patient's system against the effects of matter of a different nature. All who have had much experience upon this subject must now know that the ordinary secretion of an indurated sore will, when inoculated, often produce no result, while the secretion from a suppurating sore will produce upon the same patient the specific pustule. But the converse of this —namely, that a patient may become proof against any further inoculation from a suppurating sore and yet be liable to infection from other kinds of syphilitic matter—is a fact which has certainly not hitherto received in England that attention which its importance demands. Practically, some approximation to an illustration of this subject may be afforded. A patient may have a series of soft suppurating sores without any constitutional effects being produced. He may then have an indurated sore followed by the ordinary train of secondary symptoms. This I have frequently witnessed. The suppurating sores do not prevent or modify the indurated sore; and the indurated sore, on the other hand, does not prevent the repeated inoculation of the secretion of the suppurating sores.

In the experiment above referred to, as nothing is said to the contrary, we may infer that the immunity was produced by the usual mode of inoculation lately practised in England—namely, by a very slight abrasion of the cuticle with the point of a lancet. This kind of immunity, as lately shown, does not

imply immunity as far as the deeper structures of the skin are concerned, nor does it imply immunity for other parts of the body, and still less does it imply immunity against the action of other kinds of secretion.

As far as our evidence at present goes, a patient might therefore be "thoroughly syphilised," as far as it could be done, by the secretion from ordinary suppurating sores on the surface of the skin, and yet be as liable as any one else to be subsequently infected with the constitutional form of syphilis.—*Med. Times and Gazette, Feb.* 9, 1867, *p.* 152.

77.—GONORRHŒA IN THE MALE.—TREATMENT AT THE HOSPITALS OF LONDON.

Mr. Bryant, of *Guy's Hospital*, tells us that he finds no treatment so successful as the alkaline. He gives the tartrate of potash in scruple or half-drachm doses three or four times a day; and in cases that have passed through the acute stage, in which want of power exists, he combines the alkali with the potassio-tartrate of iron. In many cases of chronic gonorrhœa the tincture of the muriate of iron as a medicine acts very beneficially.

The treatment of clap by injections Mr. Bryant has found very unsatisfactory. He finds that it is uncertain in its action, and at times prejudicial, the carelessness of hospital patients more than anything else rendering the practice inefficacious. Some years since he gave an extensive trial to frequent injections of some slight astringents, such as alum, in the proportions of two grains to the ounce; and when the patient injected the solution every hour a rapid cure was not unfrequently effected. A solution of tannin of the same strength was also found useful. The practice could not be followed up in the majority of cases on account of the inability of the patients to find the time for it. Mr. Bryant is now employing a concentrated solution of tannin in glycerine introduced into the urethra on a bougie at short intervals; and, up to the present, his experience speaks favourably for the practice.

At the *London Hospital*, where the patients are low in the social grade, and careless of their own health as well as devoid of all domestic comfort and convenience, Mr. Maunder usually treats a case of uncomplicated gonorrhœa so as to give as little trouble as possible to the patient himself. At both the onset and subsidence of the attack a mixture, composed of copabia, liquor potassæ, spirit of nitric ether, and camphor mixture, to be taken thrice daily, is prescribed; and a low diet, with abstinence from malt and spirituous liquor, is ordered.

Tea, milk, water, and the like may be taken to any extent. Should the case run on to the acute inflammatory stage, a scruple of acetate of potash, with or without the eighth of a grain of tartar emetic and of morphia, for a dose is substituted, and is ordered to be taken every four hours, night and day if possible. Patients generally manage to take either four or five doses during each twenty-four hours. An occasional purge. No stimulants of any kind, but as much in the shape of diluents as the patient can be induced to swallow. The potash tends to diminish the naturally irritating quality (acidity) of the urine when passed over an inflamed surface by neutralising the acid ; and bland fluids, by distributing the acidity through a large quantity of the renal secretion, have a similar tendency. Should the case degenerate into a gleet, and scalding on micturition have disappeared, twenty drops of the tincture of steel, thrice daily, is the remedy employed. In private practice Mr. Maunder prefers to treat a recent attack of gonorrhœa by oft-repeated injections of sulphate of zinc, not omitting also to apply *general principles* suitable to an inflammatory disease.

In Mr. Callender's practice at *St. Bartholomew's Hospital*, cases of acute gonorrhœa in the male are treated with injections of sulphate of zinc (two grains to one ounce of water); if there be much local inflammation the use of the injection is suspended for a time, and the inflammation is allayed by means of warm fomentations, warm baths, and the internal administration of opium in some form or another, or by the use of a suppository of morphia introduced into the rectum. During the treatment the general health is considered according to the requirements of individual cases, and under all circumstances medicine is given to maintain free action of the bowels. Diluents are prescribed, and the urine rendered as little irritating as possible. The ordinary diet, if moderate, is not interfered with. The patients are, as a rule, very dirty, and this is a difficulty not easily got over ; but they are ordered to keep themselves clean, and to bathe away discharge, from suppurating bubo or from urethra, ten or twelve times daily. The end of the penis, if covered at all, is only loosely so, that discharge may find easy outlet and not accumulate. It is almost invariably necessary to deal with phimosis, when present, by operation, and this for the sake of cleanliness.

This, in brief, is the general plan, and one all but invariably successful. Inflammation of the testicle is set right by support (chiefly supplied by the local application of a large linseed poultice, which serves also as a kind of fomentation), by opium, and by the recommendation to remain in the recumbent position for a few days. If patients are sent to the out-patients' room with

so-called gleet, the cause of the discharge is of course first investigated. If it be simply the remains of a gonorrhœa it is seldom interfered with, as it will get well of itself sooner than if harrassed with reputed remedies. Of such, however, the local application of bougies, or the counterirritant effects of blisters applied to, or of nitrate of silver rubbed over, the front of the upper part of the thigh (Scarpa's triangle) are found the most efficient. Enlargements of the glands in the groin are treated with lead lotion and rest (if attainable). If the parts around them inflame they are poulticed, and, if it be absolutely necessary, they are opened by free incision (the line of cut being, without exception, vertical), and are not allowed to break of themselves.

At *King's College Hospital*, for gonorrhœa in the male, the plan of treatment found most generally successful by Mr. Wood is—

In the acute stage.—1. To commence the treatment by prescribing abstinence from wine, beer, and spirits of all kinds, and from stimulating food. 2. Then to administer a saline aperient, or a drachm of compound jalap powder, or a drachm of jalap and calomel (if the patient be of bilious habit), at intervals of three or four days or a week during the treatment. 3. Then the administration of liquor potassæ, or bicarbonate of potash with camphor mixture, or the infusion of pareira three times a day, with the abundant use of diluent drinks, such as toast-water, cold tea, barley-water, or linseed-tea. 4. In a day or two after the commencement of the discharge, the *frequent* injection of a weak lotion made with glycerine, two ounces to each half-pint. This is continued throughout the acute stage. In no instance has it been considered to be the cause of swelled testicle. 5. In swelling of the testicle, the recumbent posture or mechanical support, with hot fomentations and calomel and opium to relieve pain. In cases attended by severe pain, or where prompt relief is urgent, a small puncture into the distended tunica vaginalis and epididymis is at once followed by a diminution or entire cessation of pain. A little blood-and-serum usually issues from the puncture. In no case has this practice been followed by a bad result. Mr. Wood does not puncture the testicle itself, considering that the chief seat of the swelling in these cases is the epididymis and tunica vaginalis. In one case where the gland had been punctured by a surgeon he observed an adhesion formed between it and the skin, giving some annoyance and inconvenience to the patient. 6. To allay chordee, camphor-and-henbane pills are used, or, in severe cases, morphia or chlorodyne, aided by the local application of iced water, lead lotion, or evaporating lotion.

In the chronic stage.—1. While the discharge remains thick and profuse, he uses the copaiba emulsion with dilute sulphuric

acid or copaiba capsules, and frequent injections of sulphate of zinc, alum, or nitrate-of-silver lotion; recommending particularly the complete washing away of the discharge by a syringeful of water, so that the injection may be applied directly to the inflamed part. 2. As a change of remedy in obstinate cases, powdered cubebs in drachm doses. 3. In sluggish cases with gleety discharge and general debility, he uses tonics and mineral acids, and especially the tincture of sesquichloride of iron, twenty minims three times a day, with water; and if the discharge becomes gleety or thin, he has found great benefit from the injection of a weak solution of chloride of zinc, and also from the perchloride of iron, mixed with glycerine and water in each case. The two latter are his chief resource in cases of gleet not depending on stricture, varied by the application of the same substances by the use of the bougie of cocoa-butter, or with matico.

At *St. Mary's Hospital*, Mr. Gascoyen has found that, in the very early stage of gonorrhœa, before the urethra is much inflamed, and the discharge and scalding are still slight, weak astringent injections, frequently repeated, will generally subdue the disease in a few days. When, however, the inflammation has become severe, with profuse discharge, ardor urinæ, chordee, &c., he does not use injections, but considers copaiba to be the most valuable remedy. This drug he administers in the form of capsules, beginning with small doses, and gradually increasing them until a maximum quantity of from forty to sixty drops of the balsam is taken during the day; this large dose is persisted in for two or three days, and then rapidly decreased. If the curative action of the drug be not experienced within ten or twelve days, it will fail to effect a cure. Mr. Gascoyen has frequently seen the disease yield to this treatment, and it gives almost immediate relief from ardor urinæ and irritability of the neck of the bladder; should these symptoms be very distressing and the chordee severe, the medicine may be most usefully supplemented by suppositories of soap-and-opium.

The effect of the copaiba upon the digestive organs should be carefully watched, and if nausea or purging be occasioned the quantity must be at once diminished. The eruption which sometimes is produced by the use of this medicine is, in Mr. Gascoyen's experience, very rare; he considers it to depend upon an idiosyncrasy on the part of the patient, or to his state of health, as it is generally caused by a few small doses of the drug.

After the violence of the attack has subsided, or when the treatment by copaiba is insufficient, weak injections may again be employed, with drachm doses of cubebs if the discharge be very obstinate, and then quinine: tincture of iron and other

tonics will often prove of service. Meat and an unstimulating nutritious diet should be given throughout, and the general health maintained, lest the discharge become chronic, when it is often most persistent and difficult to cure. In many cases wine may be allowed from the commencement, and where the discharge shows a tendency to become chronic it will often be found of great service, and especially in persons of a scrofulous habit. Each individual case, however, requires its treatment modified according to the condition of the patient.

The treatment by salines and depletory remedies in the early stage of gonorrhœa Mr. Gascoyen has found not only useless in controlling the inflammation, but positively injurious, by allowing time for the disease to run its course unchecked before the employment of more efficient means. The so-called "abortive" treatment—that of injecting strong solutions of nitrate of silver into the urethra to destroy or cut short the disease at its onset—he has scarcely ever known to succeed; but has seen attacks of gonorrhœa much aggravated by it, and in a few instances dangerous symptoms followed its use.

Mr. Barwell, of *Charing-Cross Hospital*, has for years past treated gonorrhœa as a simple non-specific disease, avoiding copaiba, which by disordering the stomach and causing loss of appetite, depresses the health, and is apt to increase or lengthen the disease. In case of a first attack, in which inflammation runs high, a purge, hot bathing, and an alkaline medicine, either diuretic or aperient as may be indicated, followed by an injection of sulphate of zinc—two grains to the ounce. Second or subsequent attacks may be treated without such preparation by injection, free action of the bowels being secured, if necessary, by medicine. If the patient apply on the first day of the discharge showing itself, a week may often suffice to check it. More chronic cases may be advantageously treated with tannic acid—three or four grains to the ounce; and, in order that the fluid may remain longer in contact with the mucous membrane, it may be thickened with starch or sugar. Mr. Barwell has not found that orchitis follows the use of injections of the above strength more frequently than it succeeds to gonorrhœa not locally treated; and stricture is certainly a rarer sequela to such treatment than to a clap allowed to run on for weeks or months. The slight but continuous discharge of a gonorrhœa become chronic is often difficult of cure. Turpentine, either Chian turpentine or Canada balsam, with black or Cayenne pepper, is frequently useful. Tincture of steel and tincture of capsicum often avails. As a pepper, cubebs will have a similar effect; but it is not better, and is more clumsy, than the above-named sorts. The most certain and efficacious treatment is by an ointment containing from three to five, and even to ten, grains

of nitrate of silver to the ounce of lard. A small bougie smeared thickly with the ointment is passed from half an inch to an inch and a half down the urethra, and left there for half a minute or more; and this should be repeated at least every other day. In general, commencing with the mildest ointment, one need not increase the strength beyond five grains to the ounce. In only one very obstinate case was it used ten grains to the ounce; but the patient got well without a bad symptom.

At *University College Hospital*, Mr. Christopher Heath, looking upon the disease as purely local—at least in its earlier stages,—uses injections from the first, but modified according to the circumstances of the disease and of the patient. If the patient is seen in the premonitory or very early inflammatory stage, Mr. Heath believes that the disease may be cut short much more effectually and safely by a strong lead lotion (liq. plumbi diac., ʒj., aquæ, ℥vij.) than by solutions of nitrate of silver. In the ordinary acute form of the disease, injections of warm water and weak lead lotion, together with bicarbonate of potash and henbane internally, are found to relieve the symptoms, and are followed up by a sulphate of zinc injection when the acute symptoms have subsided. Although beer is interdicted, the patients are permitted a glass of weak gin and water at night, and their diet is not interfered with. Copaiba is rarely given, and only in the cases where the discharge continues profuse, though thin, some time after the inflammatory symptoms have subsided.

Complications.—Chordee Mr. Heath finds to be effectually relieved by the application of extract of belladonna and glycerine along the under surface of the organ, combined occasionally with a sedative pill (opium or henbane) at night. Orchitis in the acute stage is found to yield readily to antimony in combination with sulphate of magnesia; and where there is much œdema, a puncture is made into the tunica vaginalis, where, under these circumstances, there is a certain amount of effusion. In the later stages, strapping, or the use of mercurial ointment is found to remove any remaining enlargement.

In cases of gleet, Mr. Heath makes a careful examination of the urethra both with bougies and with the endoscope, in order to discern the exact nature and situation of the disease. If, as frequently happens, a distinctly diseased surface is discovered, a strong solution of nitrate of silver is applied topically with the best results; if the disease appears to be more general, the use of astringent injections, the passage of a large metal bougie, and the internal administration of steel yield satisfactory results. Mr. Heath believes that in many chronic cases the so-called gleety discharge is nothing more than the ordinary secretion of the mucous follicles of the urethra, increased by the over-assidu-

ous manipulations of the patient, and that this subsides as soon as the attention is diverted from it.

At the *Middlesex Hospital*, Mr. Hulke has for several years treated gonorrhœa almost exclusively by injections, being influenced in this practice by the obvious analogy between purulent inflammation of the mucous membrane of the urethra and that of the conjunctiva. In the early stage, when the inflammation is acute, he prefers an injection of acetate of lead, frequently repeated, gives a free purge—commonly compound jalap powder, —and forbids beer and spirits. In the more chronic condition, he often uses an injection of one grain of nitrate of silver to eight ounces of water, the general rule being to use weak injections rather frequently, but stronger ones at longer intervals. In old gleets he prescribes occasionally copaiba or cubebs, but more frequently the tincture of sesquichloride of iron.

Buboes, when seen before suppuration has commenced, are leeched, but, when suppuration impends, are painted over a small spot with a strong solution of iodine, which either effects their resolution or more often hastens their pointing. They are always opened by a vertical cut. Sinuses and induration are treated by a compress and spica bandage. Mr. Hulke does not find that the treatment by injection tends to promote secondary orchitis, nor does he think the objection that it is more often followed by stricture well founded. The liability to stricture is proportioned to the duration of the disease; and this is shorter under the treatment by injections than when internal remedies only are used.

Consecutive orchitis, at first, when the symptoms are acute, is commonly treated by a few nauseating doses of tartar emetic with Epsom salts; and generally on the second or third day the testis can be strapped. This should be done with the patient recumbent, and before the strapping is applied he should gently compress the testis with his hands, in order to empty it and the scrotum as much as may be of blood. This plan is very preferable to the erect posture, in which dressers commonly strap the testicle.—*Lancet, March* 16 *and* 23, *and April* 13, 1867, *pp.* 331, 362, 458.

78.—ON THE TREATMENT OF GONORRHŒA.

By Spencer Watson, Esq., Montague-street, Russell-square.

[The following article was elicited by the account given of the treatment of gonorrhœa in the London Hospitals. Mr. Watson calls it the "Disinfectant Treatment."]

This plan consists in frequent injections of a solution of carbolic acid and bicarbonate of potash, half a fluid drachm of the former and one drachm of the latter to a pint of water. I

direct this injection to be used every two hours if the gonorrhœa has only just commenced, and there is little or no thick pus being discharged, and if there be little or no swelling of the glans penis. If there be any great swelling of the glans, and copious purulent discharge and much scalding, I discontinue the injections, and use antiphlogistic medicines internally. The liquor of acetate of ammonia and tincture of henbane are very useful in this stage. When the swelling has abated, I recommence the injections of carbolic acid and potash every 3 or 4 hours.

I have every reason to be satisfied with the results of this plan of treatment, which I have tried at King's College Hospital during the last seven or eight months. I at first used carbolic acid alone without the potash, and in one or two cases unpleasant symptoms occurred, which seemed to be due to the great irritation set up by the acid. I have not found any such results from the injection of carbolic acid and potash.

I have been in the habit of treating the acute orchitis in gonorrhœa by puncture of the tunica albuginea in all cases in which there was severe pain, such as prevented sleep. It has almost always given speedy relief, and in several instances in which other remedies had been tried, and had failed to relieve the pain, the incision into the front and lower part of the testicle, as recommended first by Vidal de Cassis, and more recently by Mr. Henry Smith, has given speedy and persistent relief of all the symptoms.

I have had no experience of puncture of the epididymis, as mentioned by Mr. Wood; but I can confirm his statements of the *immediate* relief afforded by merely puncturing the tunica vaginalis. In two cases I let off the serum that had collected in this cavity by means of a fine trocar, and the patients expressed themselves as much benefited; but they soon had a return of the pain and swelling. I am inclined to think, therefore, that it is of importance to let blood from the organ as well as to slacken the distended serous bag.

[In another communication to the Lancet, a correspondent, M.D., proposes that "the following treatment should be fairly tried."]

For males: pills and injection only; of calomel and compound colocynth, one to two and a half grains in each pill, night and morning; one drachm of tincture of iodine to six ounces of water for injection every three hours with a small glass syringe.

For females: pills and iodine paint only; of blue pill and compound rhubarb, one to two and a half grains in each pill, night and morning; tincture of iodine applied with the speculum and camel-hair pencil internally every day.

I have used this treatment during ten years without a failure —in all sorts of cases, however inflamed the parts may be in gonorrhœa, or obstinate the gleet.—*Lancet, March* 30, 1867, *p.* 411.

MIDWIFERY,

AND THE DISEASES OF WOMEN, ETC.

79.—ON THE COMPARATIVE VALUE OF THE LONG FORCEPS AND TURNING IN CASES OF CONTRACTED PELVIC BRIM.

By Dr. Alexander Milne.

There is no little diversity of opinion yet existing among obstetric practitioners with regard to the best line of procedure in those cases of disproportion, where the head, despite of good pains, becomes arrested about the pelvic brim. I allude more particularly to those cases of moderate contraction where the conjugate diameter ranges from two and three-fourths to three and a-fourth inches, excluding those more serious instances of diminution and distortion where craniotomy is inevitable. I say inevitable; for I am afraid we shall not be able to abolish this operation entirely, though limiting it as much as possible, any more than we have been able by means of ergot to bid adieu to the forceps, as was at one time fondly fancied, or to cure all maladies by the knowledge of the circulation and properties of the blood, as the illustrious Harvey—who was also, by the way, a respectable midwife—ardently dreamed.

A conjugate brim diameter of the above size, the head being of the ordinary dimensions, almost always demands the interposition of art, and the question is, what shape or form shall the interference take, in order best to fulfil the object ever before our minds, viz., the accomplishment of delivery in the way most conservative of maternal and fœtal life, least fraught with injury or sacrifice? An important question, too, this undoubtedly is, for in such cases two lives are somewhat in danger—a danger that may, and does at times, eventuate in death. Only two alternatives are presented to us, excluding craniotomy on the one hand, and on the other the induction of premature labour, which, however, implies a previous knowledge of particular pelves, an operation of paramount value where more serious diminution exists. These alternatives are the long forceps and turning.

I. *Forceps.*—I shall take the forceps first. Now, of course, I have got to deal with the long forceps only, or with what has

been forcibly and significantly termed by Dr. M'Clintock, the "high operation." The short forceps I will praise as loudly as any one; believing it to be a comparatively safe instrument, and that countless lives, both of mothers and children, have been rescued by it since the days of Paul Chamberlen. But can the same praise be awarded to the long instrument? Does the same value attach to it? Can it boast of as many achievements, unmixed with disaster? I fear not. What are its claims? The chief merit claimed for the high forceps operation is, that by it we may occasionally extract a child in cases of narrowed brim, where no other prospect is offered but the "sad and horrible" one of craniotomy! Now, granting that this happy result is obtained in some instances, and conceding further for argument's sake, that turning in these same cases could not have been accomplished, the question remains, Is the result worthy the price, or is the benefit obtained not outweighed by the attendant risks and dangers? Take the mother first, as the more important life, according to obstetric ethics—the life to be protected and spared in preference to the child's, according to the views alike of existing luminaries, and of the "great ones gone." What dangers threaten her, to what hazards is she exposed? In the first place, from the long delay, and delay is inseparable from such cases (the os being long in dilating), she may become exhausted, and suffer from a train of well-known painful symptoms; or the protracted pressure may lead to inflammation, suppuration, and sloughing, fruitful of those unfortunate maladies that afford scope for the ingenuity of the Sims and the Wells, the Browns and the Bozemans; or even rupture of the uterus, with its usually fatal termination, may be induced. Some, nay many, may escape with impunity; but it is undeniable that, in general, delay is pregnant with danger, or, as Sir James Simpson pointed out long ago from the tables of Collins, "the longer any patient remains under labour, the less chance has she of recovering from her confinement." Such are the risks prior to the use of the instrument; in its application mischief threatens her probably even more. For example, the vagina, tumefied by the delay, may be readily torn, or some part of the uterus may be lacerated. Indeed, no one can tell what injury the point of the blade may do as it travels its critical way within the cavity of the womb any more than we can tell what lies at the bottom of a draw-well, or in a valley in the moon. Further, even when the instruments are applied and locked, there is the force required for extraction: often very great, as I have seen,—so great that it were almost a miracle to escape contusion and laceration of parts. And here I would just interpolate that I was very much struck when, at our last meeting, one of the respected Fellows of this Society declared

that he was in the habit of keeping the forceps on for no less a period than two hours. Such a practice is, I should think far from safe; nay, is big with risk, as the records of midwifery show. I witnessed one case where everything seemed to be going fair; the blades were fairly applied, though not without some difficulty, and the child was extracted, though not without a good deal of that article which sage writers justly declare should have no place in midwifery,—I mean force; but on the completion of delivery unequivocal symptoms of rupture were manifested, and the case terminated fatally. Many similar cases are on record, as, for example, cases 11 and 12 in the Clinical Midwifery of Dr. Robert Lee.

Take now the case of the child. How fares it in general? Is it free from hazard in the "high operation"? Certainly not. In the first place, that very pressure to which I have referred as injurious to the mother, the pressure exerted by the uterine contractions ere the os is sufficiently dilated to admit of art stepping in, may destroy its life. Its brain will not tolerate prolonged compression with impunity, even while within the womb. Of this the stethoscope can inform us. Then, if it should escape this Scylla, there is the Charybdis of the forceps. The compression to which the head is exposed during the "high operation" is doubtless severe; and if, as is generally the case, the blades are applied obliquely, then the force is exerted in the antero-posterior axis of the head, which is believed to be the most dangerous direction. Lastly, if it escape with life, it is perhaps not very far-fetched to say that that life may be a sad one, for it is suspected that permanent brain injury—mental damage—may result from the severe compression of the head; and if such be the case, we may thus entail on a family a source of perpetual sorrow and compassion, and on the state a helpless and hapless member, incapable alike of protecting himself or others. Peril to the mother, and risk to the child, then, always attend these long forceps cases; but even greater misfortune is not uncommon, for the operation may be altogether impracticable. Failure may attend the most dexterous efforts to introduce the blades. The non-success may arise from some part of the os being undilated, either from rigidity or pinching between the head and the pelvis, or from a jutting forward of the sacral promontory, or the want of sufficient space, or, as in one singular case that I witnessed, from a tight circular band of uterine tissue (probably an undeveloped or tetanized portion) in the cervical zone. Or again, one blade may pass, and the other fail, or both may enter, yet refuse to lock, being placed on divergent instead of parallel lines. This, of course, involves withdrawal and re-introduction, with delay and renewed risks, and possible failure a second time. Moreover, the instrument may be applied,

and yet our efforts to bring down the head prove fruitless and unavailing. The object in these cases of contracted conjugate is to diminish the transverse diameter; but it so happens that the antero-posterior direction of the brim is the one that presents greatest difficulty; and therefore in applying the blades in the transverse or oblique diameters of the pelvis, which are the most accessible and feasible, we augment the transverse diameter of the fœtal head, the very one we require to lessen, and thereby aggravate the task of extraction. I am aware that the increase may be partly in the direction from the vertex to the chin, but it must also be to a certain extent from one parietal bone to the other, and even a small amount may prove an insuperable bar to delivery in such cases. I have now seen two or three where considerable force—probably a good way beyond legitimate or safe limits—failed to procure any palpable descent, and where the instrument had to be withdrawn and abandoned.

II. *Turning.*—This operation, known to the ancients and practised by the older authors, was especially much in vogue after its advantages had been demonstrated by Paré and his pupils; but in this country at least, the introduction of the forceps eclipsed it somewhat, and it fell into comparative disuse for a lengthened period. In France, happily in my humble estimation, turning did not receive so rude a shock, but stood its firm ground, and was had recourse to by many, as before.

What claims has version to our confidence and support? In the first place, there is a mechanical advantage obtained by it, as pointed out by Baudelocque and Sir James Simpson. This arises from the fact that the diameter of the base of the fœtal head is less than that of the interparietal, and because the transverse diameter, which is the most important in most cases of narrow brim, may be reduced to a greater extent when the base is made to enter the pelvis first. There may be something also in this, that whereas in the case of the forceps, as we have seen, one diameter alone is reduced (which reduction involves increase in another direction); in traction, all diameters are compressed and lessened more or less, and the fœtal head becomes moulded into the particular shape of the pelvic brim. These views are doubted by some and denied by others, but surely a succession of cases where turning succeeded, after the forceps failed, ought to cut away any ground for scepticism or dissent, and win acquiescence and approval. If it be the case that we have a virtual increase of space—that the head will pass a more limited space in this way—the advantage can hardly be overestimated, the gain is unspeakable, for we may thus, in many cases, avoid the woful work of perforation, and bring home even a living child.

Another advantage pertaining to turning is that it may be

performed at an earlier period of the labour. In the case of the forceps, it is alike impracticable and unsafe to apply them unless the os be almost entirely dilated (and the expansion and disappearance of its disc may take a long time indeed); in turning, on the contrary, the hand may be often gradually and safely inserted when the os is only the size of a half-crown. There is here a twofold benefit. On the one hand, and on the side of the mother, we avert the chance of exhaustion and the grave results that spring from prolonged pressure; and, on the other, we avoid the protracted compression of the fœtal head, which may prove fatal, time being equivalent to force. The full benefit of this early action and interference is best obtained, and its value and beauty seen, in those cases where we have become acquainted with narrowed pelves, and are early on the ground watching for the earliest fit and practicable moment. In such instances, if we are present before the escape of the waters especially, and if we employ chloroform, delivery may be effected in a very few minutes, and while the patient is in a pleasant trance. How marked again the contrast between this process and that of the forceps, with its long, and anxious, and painful delay, and probable chain of formidable ills!

A third recommendation may be noticed briefly, and that is, that the performance of version demands no other instrument than the soft hand. The essence of the merit here lies not so much in the fact that it can be done in the absence of obstetric instruments, for these ought always to be forthcoming, if absolutely indispensable, but because the avoidance of hard steel is tantamount to the avoidance of probable damage and possible disaster.

Such are the principal advantages of turning in cases of disproportion at the brim; but I must now glance at the other side of the picture, for there are certain demerits, disadvantages, and disabilities with which the operation stands chargeable. As in the case of the forceps, I begin with the mother. What are the alleged risks and dangers incident to her? It is said that her soft structures, the vagina and the uterus, may be bruised or torn by the hand of the operator, and that laceration may also be occasioned by the movements of the fœtus as it revolves round its own axis in the process of turning. Now, surely, the soft hand, endowed with sensation, feeling its way as it cautiously enters the uterus, is far less likely to injure than the hard and sensationless iron. The hand can detect obstacles and recoil, again to surmount them, while the unperceiving metal, even cautiously inserted, may force its destructive way through them. Then, in the gradual revolution of the fœtal body, there cannot surely be much danger, seeing that with care nothing but smooth and convex surfaces need be pre-

sented to the uterine wall. Of course, when the head is being dragged through the brim, the uterus is liable to be crushed at any prominent pelvic points; but the hazard here cannot be so great as in the case of the forceps, where the iron lies along the fœtal cranium. This is not mere conjecture, for experience goes to show that the operation is not by any means a dangerous one for the mother; and in proof let me again quote from Ramsbotham. In a foot-note, he observes, "Between the years 1823 and 1852, I delivered nearly two hundred women under transverse presentations. Many of these cases presented a formidable appearance; for in one the membranes had been ruptured a whole week; in another sixty-nine hours; in a third forty-eight," and so on. "In not one of these instances," continues he, "was any injury inflicted on the uterine structure by the hand, so far as I know; nor did any permanent evil arise that could be attributed to the operation." Such is the testimony of an able and experienced accoucheur and author; and could stronger proof be adduced of the safety of turning, so far as the mother is concerned? I think not. I may also add, that in not one of the cases in which I have operated, and these amount to twenty-seven in all, including a few transverse presentations, &c., were there any evil consequences to the mother.

But it is alleged further, that after bringing down the feet we may fail to make the head pass the brim, and thus have to perforate in a more unfavourable position. Now, I think that if a careful gauging of the brim be made beforehand by that natural pelvimeter, the hand, preferable in my opinion to the instruments of Baudelocque and Coutouli; if the sacro-pubic diameter be thus previously measured, the chance of failure is less likely to occur; and even were it unsuccessful, I am not so sure that craniotomy would be much more difficult. Having, however, never failed myself, after getting hold of the feet, I can give no opinion founded on personal experience.

Lastly, it is said that another dilemma may be in store for us; we may in some cases fail to reach the feet. The head may be filling the brim too closely for the hand to pass, or the uterus may be contracting so vigorously as to defy the most skilful and persistent attempts. Now, cases of this kind do occur, but not very often. In the two hundred cases before alluded to, Dr. Ramsbotham only failed fourteen times, and these were instances of extreme difficulty. It is wonderful how easily the head may be pushed out of the way, and the hand glide up to the fundus of the womb, unless in those cases where the organ has taken on permanent contraction, and is therefore considerably diminished in size. Besides, incalculable benefit is to be got from chloroform in the way of overcoming the force of the uterine contractions, and inducing relaxation of parts; and I

am not so certain whether Dr. Ramsbotham might not have lessened even his few failures had he been a greater believer in the wondrous anæsthetic; although no doubt the greater bulk of these cases occurred before the introduction of chloroform.

I come now to the child. What are its prospects in turning in these cases? Those who oppose version found much of their hostility on the dangers to the infant. They say that it is jeopardized in two ways,—two swords as it were hang by a slender thread over its head; if it escape the one, it is almost certain to perish by the other. There is, first, the risk of pressure on the funis; and, secondly, that arising from over-extension of the neck. Now, it would be absurd to deny that these are serious dangers, but yet it is wonderful how often they are, or may be escaped. For instance, with reference to the cord, there is the chance of its getting a safe lodgment in some niche of the pelvis, and the probability of fatal compression will be diminished by effecting the passage of the head as speedily as possible. I need hardly add, that the most persevering efforts should be made if the child when born should not breathe; in one case of suspended animation, I was rewarded with success after twenty-five minutes' exertion.

Then, with reference to the extension of the neck, I have only to say (while admitting freely that mischief may occasionally be inflicted in this way) that it is truly surprising what an amount of trailing, or traction rather, these "little clouds of glory" will bear. The strength of their neck is quite wonderful; and probably, as the head will bear more compression with impunity while the child is in utero, so the neck will tolerate greater extension. At all events, I have pulled pretty strongly for a minute or two, without entailing even ephemeral injury, as evidenced by the liveliness and contentment of the child when it was ushered into the world. Moreover, it should be borne in mind, that, owing to the head when it enters with the base first, adapting itself more correctly to the brim, the points of resistance are diminished, and less force is required to pull it through. I have seen more than one case where the head paused about the brim for hours, despite vigorous pains, and yet when the feet were caught, no more force was required to bring it through than was needed for the other parts of the body.

Such then, are, I think, the principal points connected with turning. It is in my opinion a valuable operation in cases of moderately contracted brim, and my own experience of it leads me to commend it strongly. It is by no means dangerous to the mother as a rule,—I think much less so than the high forceps operation; and it is yet an unsettled point whether it is fraught with more peril to the child. I mean, of course, in the

aggregate of cases, for I am contrasting it with the long forceps, with its delay and severe compression, and the results of these and probable failure with craniotomy looming ugly and sombre. But even admitting for argument's sake that the hazard to the child is greater in turning, if it be conceded that the danger to the mother is less, then we are shut up to version as the proper and preferable course, if we subscribe to the obstetric doctrine that the mother's life is the most valuable. Turning, then, should be the rule, and not the exception; and instead of waiting long and weary, and, for the patient, critical hours, until the head makes its dubious descent far enough to render the forceps practicable, hours during which the unfortunate woman may, like the Congress of Vienna, as Talleyrand remarked, dance and tumble long enough, without the head advancing any, we should proceed to seek for and bring down the feet, and thus deal most mercifully and conservatively with the dearest life, and probably no less safely with the obstetrically cheaper life of the child. Doubtless more statistics are desiderated to carry conviction with some; these I trust shall be forthcoming. In the meantime I conclude by presenting a few as my instalment to the growing offertory, hoping that they may help in a small way to further the solution of an obstetric question in which is bound up the safety of many mothers and children.—*Edinburgh Medical Journal, March* 1867, *p.* 798.

80.—ON AN IMPROVED FORM OF HANDLE FOR MIDWIFERY FORCEPS.

By Dr. Andrew Inglis, Accoucheur to Edinburgh New Town Dispensary.

The principle which has suggested to me the alteration I am about to describe in the construction of the handle of midwifery forceps may most simply be illustrated by reference to the form commonly adopted in mechanical contrivances where strong manual traction is required. In these the handle consists of a crossbar at right angles to the line of traction, so that the hand and forearm of the operator may lie directly in the line of traction. A common corkscrew is, perhaps, the most familiar example of this arrangement. If such a handle were to deviate from the direction I have mentioned, the power of traction would be diminished in proportion to such deviation, and the power of directing the traction would also be impaired. Nevertheless, the handle of our ordinary midwifery forceps (with the exceptions I shall refer to) lies directly in the line of traction, and therefore in the most disadvantageous position possible. By this means not only is much force that might be employed in

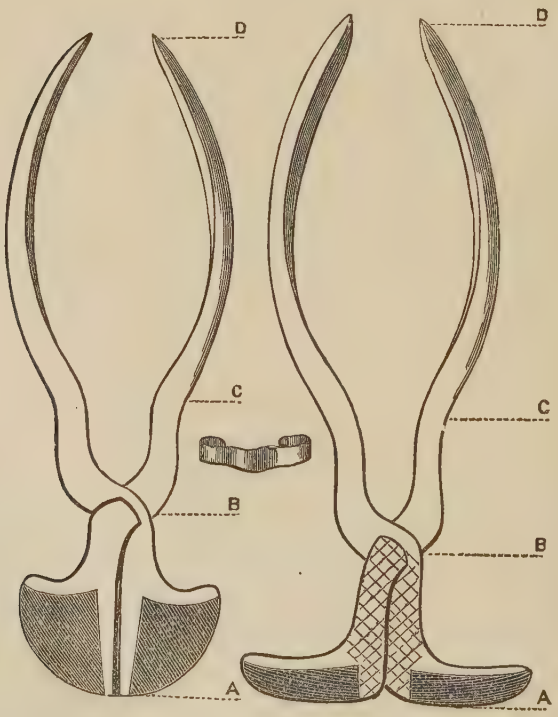
making direct traction spent in maintaining hold of the handles, but the wrist is put into a constrained position, and, the hand and arm being placed at an angle with each other, a farther loss of power is thereby occasioned. In this country Sir J. Y. Simpson and Dr. Radford have alone recognised these principles in the construction of their respective forceps. In Dr. Radford's long forceps there are two horns, one on each handle, near the blade, which form a sort of crossbar by which we can pull without requiring to grasp the handles very firmly. The handle, however, beyond these horns is long and smooth, and cannot be used without compressing the head. Sir J. Simpson's forceps have two horns also, but they are better adapted for strong traction, and the rest of the handle, which is shorter than Dr. Radford's, is deeply notched, so as to do away to a great extent with the necessity for compression while pulling. I have for some years used this last-named pattern of forceps, and have observed that in almost all cases compression was unnecessary, traction by means of the horns being sufficient to keep the blades together. In consequence of this I have made some experiments to see how far the compressing power can be dispensed with, and how far the power of traction may be improved. The result has been the production of the two pairs of forceps I have figured. The small pair (Fig. 1) was made first, and was intended to be used only in cases of uterine inertia or slight contraction of the outlet; but the success I met with in such cases induced me to use them in a very severe one, where the head was near the brim, and in this case also the result was good. The measurements of this pair are—From A to D, 10 in.; from A to C, 4 in.; from A to B, 3·5 in.; breadth of handle, 2·5 in.; weight 13 oz.

Though quite pleased with the grasp and power of this short pair, I found one disadvantage connected with its shortness. The distance from the tip of the blade to the lock is only 6½ inches, so that great care is required in the high operation lest a small piece of skin be nipped in the lock. To obviate this, I constructed another pair (Fig. 2), in which the distance from tip to lock is about 8 inches. With this pair no such accident can occur. The increase of length in the blades, however, increased their leverage, and the handles had also to be lengthened proportionately, to prevent any chance of slipping; to effect this, the horns were removed the requisite distance from the lock. The handle then (if made like that of the first pair) was not much shorter than in an ordinary pair. This length, at last, I managed to get rid of by extending the horns laterally so that the cross pieces should fill the hand. The measurements of the long pair are—From A to D, 10·3 in.; from A to C, 4·4 in.; from A to B, 2·2 in.; breadth of handle, 4·5 in. Weight, 14 oz.

I have not required to use this pair yet, but have tested it thoroughly on the model, and find that it affords a secure hold.

As some who have not seen the instruments in use have expressed a fear that with such short handles the blades might lose hold, I have contrived a link which can, after the forceps are locked, be applied at the point marked c, and which totally prevents any slipping. I may mention, however, that I have

Fig. 1. Fig. 2.



not seen any occasion to use it, nor do I believe that it is necessary; as the direct compression exerted by the hand, and the indirect compression produced by the traction on the horns, seem to me sufficient.

The advantages which this plan of shortening the handles of midwifery forceps possesses are, (1) greater portability; (2) greater facility for introduction; (3) improved power of traction; (4) improved power of guiding the traction.

This alteration of shape in the handles can be applied to any form of blade, and the link also may be used with any pattern. Those I have figured have blades very similar to those of Sir J. Simpson's long forceps, having, like them, near the lock a space between the blades into which the forefinger of the left hand may be inserted.—*Lancet*, *Dec.* 22, 1866, *p.* 692.

81.—ON THE MANAGEMENT OF THE SECOND STAGE OF NATURAL LABOUR.

By Dr. James Hardie, Manchester.

[The following paper was read before the Medical Society of Manchester. The views which Dr. Hardie has been led to entertain, and the practice which he adopts, are at variance with those of the profession at large.]

The proposition to which I would invite your attention is this: *That in the second stage of a large number of cases of what is termed "Natural Labour," we may make use of our art in assisting nature, and thereby shortening the duration of labour, with perfect safety to mother and child: and that, this being the case, we are called upon to make a change in our practice accordingly.* I shall take it for granted, without entering into the question, that the forceps afford the best means of accomplishing this end, and the subsequent remarks will be based on this assumption. This will be generally conceded, though I by no means insist upon it. At present I only seek the admission of the first proposition, and will then freely leave it to each individual to use whatever may most commend itself to him, whether it be be forceps, vectis, air tractor, or something else.

Though the strictures enjoined by the older writers, such as Denman and Osborne, against interference, are now all but universally considered as obsolete, still there can be no doubt that the effect of their teaching is perceptible in that of the schools at the present day. The principle of non-interference has been so skilfully embalmed in the axiom, "Meddlesome Midwifery is bad," that in our most recent works we find the propriety of it recognised as a thing indisputable, and have the question of the necessity of violating it most carefully discussed. And it is a well-known fact, also, that the whole profession is pervaded by a certain ill-defined feeling of timidity regarding

the use of instruments—that they are not proper or not safe—so that, generally speaking, they are religiously abstained from as long as possible. But in order that we may have the matter clearly before us, let us refer to the published opinions of some of our latest authorities on the subject. Dr. Collins, quoted by Dr. Churchill, observes: "Let it be carefully recollected, at the same time, that so long as the head advances ever so slowly, the patient's pulse continues good, the abdomen free from pain on pressure, and no obstruction to the removal of the urine, interference should not be attempted unless the *child be dead.*" Churchill himself, writing in 1860, takes exception to this rule to some extent, and says that "when the second stage has lasted so long as to prove the inadequacy of the natural powers, or at all events as soon as the symptoms of a prolonged second stage make their appearance (quick pulse, dry tongue, fever, etc.), then we ought promptly to interfere." (Midwifery, 4th ed., p. 350.) Dr. Murphy, in the second edition of his work on Midwifery, published in 1862, sums up his observations on the use of the forceps thus, "When the head is slowly passing through the cavity of the pelvis, interference with the forceps is not called for, because of the *time* occupied, but rather because of the *special conditions* of the case. The use of this instrument is only justifiable when some clearly proved necessity arises; the time occupied in a labour is, *seipso*, no justification," &c. (p. 280.) Lastly, Dr. Hall Davis, writing in the present year, says: "So long as the head advances with the pains, and recedes on their retirement, the patient is safe from dangerous pressure on her soft tissues. If, on the contrary, the head has been *wedged in the pelvis in one position, under strong parturient action,* for five or six hours, we are bound, as a general rule, for the safety of the lives concerned, to extend our aid." (Parturition and its Difficulties, p. 72.)

These, then, may be taken as an example of the dicta of our authorities at the present time, and, I take it, as the exponent of the usual practice at present pursued. I shall hereafter, however, call your attention to some exceptions to this on the part of several practitioners, who, to some extent, follow the course I now advocate. But these, I believe, are the rules which would be endorsed by the vast majority of our contemporaries in this country. We, therefore, find that we must do nothing whatever to assist a woman in an ordinary case of labour, not even though it may be lingering and tedious; but that it is only when we are absolutely compelled to do so, because of danger threatening the mother or child, that we may venture to interfere. (I leave out of consideration at present the use of ergot, because it is generally given without considering that the natural process is thereby influenced, and because it is frequently inert.)

No matter though the os uteri have been fully dilated for six or eight hours, and the child be still unborn, still, unless symptoms of inability or exhaustion present themselves, we are enjoined to wait on. Though the patient have been in strong labour for three or four hours after the rupture of the membranes, still, if progress be made at all, grave constitutional symptoms must have begun to make their appearance ere we should be warranted in interfering. Though we may have waited patiently near the bedside from nine in the morning till three in the afternoon, still neither does this matter. We must exercise our patience, and wait on still. Now, I would ask, why this reticence? Why this timidity? This is the point on which I am at issue with our authorities. Let me narrate a case or two, and apply the question to them.

Mrs. Smith progressed favourably till the os was fully dilated, when her pains began to come on less frequently, and the head entered the pelvis very slowly. Soon they died away altogether, and for half-an-hour no progress was made. A dose of ergot was then given, and not long afterwards the pains returned; but they were slight and inefficient. So they continued for an hour or more, when stronger pains set in, and in four hours from the beginning of the second stage, the child was born.

Mrs. Jackson sent for her medical attendant at 8 a.m. On arrival, he found the second stage fairly commenced, and pains coming on of fair strength and frequency. A speedy termination of the labour was considered probable. It was soon found, however, that the head did not make the progress it might have been expected to do; it advanced very slowly. Every morsel of ground was, as repeated examination showed, gained with great difficulty. Still the pains continued, one perhaps every five or ten minutes, and, on the whole, progress was made. The patient frequently complained and begged for help, but was told that all was going on well. Ergot was administered without much appreciable effect; and it was only after three and a-half hours' hard, continued labour, that the delivery was completed. The child gave some difficulty in getting respiration properly established.

Mrs. M'Donald did well till the head was presenting under the arch of the pubes. Pains continued, but the head made no apparent progress. It came forward with each, but immediately receded to its former position when the pain passed off. This went on, more or less, for a whole hour in a very teasing manner, the attendant often mentally assuring the child's head, that if he could only get hold of it with his fingers and thumb, he would make short work of it. This, however, he did not do. The patient became tired and querulous. The pains diminished

in frequency, and for half-an-hour nearly stopped, when two good strong ones occurred, which expelled the child.

Mrs. Mackie was taken in labour of her first child early on Monday morning. Her attendant saw her several times during the day, and the first stage was completed about five in the afternoon. She continued to have good pains, and the head descended gradually to the perineum, occupying an hour and a-half in doing so. The pains then left her, but recommenced in three-quarters of an hour. They continued pretty frequent and of good strength; but the tissues of the vagina were rather rigid, it being her first case, and it was only after another hour's continuous labour that the child was born. All along, the patient exhibited great restlessness and anxiety, particularly during the last two hours. She tossed herself about and cried loudly for help, defying all attempts to pacify her; so that it was a matter of satisfaction to all when the labour was over.

Now, these are all cases such as we are constantly meeting with. A large proportion of our practice consists of such, or of others very similar. In all of them the natural powers are quite sufficient to complete the case, if we wait long enough, and the mother and child are daily reported to be "doing well." But I would ask, Why are we so terrified to lend nature a helping hand, when we see very well that she is in difficulty, and when so much suffering and anxiety are being endured? Why do we not step in and have the case easily finished in a few minutes, instead of allowing it to go on for two, three, four, or five hours? I go no further than this. I leave cases protracted for a third, or a half, or a whole day, out of the question, and would ask, Why allow any case to go on for the space of even *one hour* after the first stage is completed? Would it not have been more consonant with an intelligent perception of physiological facts to have supplied a substitute for the evidently too inert uterus in the case of Mrs. Smith, or to have helped it in its laborious efforts to overcome the evidently too narrow or rigid outlet in the cases of Mrs. Jackson or Mrs Mackie? And would there have been anything very dreadful in the surgeon's carrying out his wish in the case of Mrs. M'Donald, by inserting a pair of "steel fingers," and bringing his tormentor into the world at once? I am unable to give a satisfactory answer to these questions, nor do I believe that it can be shown that the truest and soundest practice would not have been carefully to have finished the labour in each case by instrumental assistance.

No one was a firmer adherent to the policy of non-interference in midwifery than was I at the beginning of my professional career; and never did one act more honestly according to his creed than did I. And yet if such cases as I have narrated

occurred to me now, I would assuredly use the forceps in each of them. I believe that there is far too much made of the danger of instrumental delivery. Women have the idea that it is something by all means to be preserved from ; they speak of some friend having had to be delivered instrumentally, in an under-tone ; they get flurried in the lying-in-chamber when the subject is mooted. Medical men, too, to a large extent, share in this feeling, and in some degree it is quite justifiable; for instruments are so rarely used till pathological symptoms have manifested themselves, that we must conclude that, when they are proposed, the patient is in some danger. I believe, on the contrary, that with proper care and undivided attention, the forceps are a most *harmless, safe, and altogether admirable adjuvant in everyday obstetric practice.* As such, I would strongly recommend them, and to do my endeavour to uproot the strange idea that we are bound to leave our patient to her own efforts till her safety is endangered, and to some extent to save suffering is the object of this paper.

Since my practice was influenced by these views, I find that, in the last 100 cases I have attended, I have used the instrument so frequently as in 28 of them, or in about 1 in every $3\frac{1}{2}$ cases. In 5 of these cases, the head was still above the brim when I applied the instrument. I can also recall some in which I was only prevented by questions of policy from having recourse to it. To say this is, of course, to say that I rarely go to a case of midwifery without taking the forceps with me. I do not use them to obviate danger, but to abbreviate anxiety and pain, and because I am convinced that I can do so with perfect safety. If there appears to me the slightest hindrance to the ready passage of the head, either from narrowness of the canal, or deficient uterine action, I make no hesitation about the matter, but apply the forceps, and finish the case. Of course, one has to be guided in his mode of manœuvring by the character of of the patient; for, although we may often enough be entreated by herself to give her assistance, still this is not the most common case we meet with. Many have had natural labours previously, and see no reason why they may not again; and then, also, the firmly-rooted prejudice has to be contended with. It is thus sometimes necessary to explain everything, and have full permission, while, in other cases, I have used the instrument without the patient's knowing anything about it till extraction was being accomplished. Let it be done calmly, and with great deliberation. There must be no "fussiness" about it, but it must be made quite light of, as if a matter of every day occurrence. It is a good plan never to let the blades come in contact with each other outside the pelvis, so that the metallic noise, always so disagreeable to a patient, may be avoided. I there-

fore carry them in a bag, with a compartment for each blade. If short forceps, such as Simpson's modification of Ziegler's, are used, which do very well when the head is just at the outlet, the whole operation can be accomplished with the utmost quietness and ease. Generally, I prefer Simpson's combined long and short—partly because they suit any case, and partly because I have become accustomed to them. I have only to complain of their bulk and weight.*

It is necessary, however, that we should notice certain *objections* which may be brought forward against such frequent use of the forceps as I here advocate. First of all, certain *dangers* are said to be incurred by their use,—such as that the *soft parts of the mother may be injured* in their introduction; that the *perineum may be lacerated*; that, by withdrawing the child too rapidly, *the uterus might not contract properly.* Now, with regard to the risk of injuring the maternal passages, I believe there is a great deal of misconception. We have been taught that forceps are dangerous, and believe it, without testing the truth. Undoubtedly, if reserved for labours in which the head is impacted in the pelvis, and the tissues have become swollen and inflamed, or in which the patient is otherwise in a state to give rise to anxiety, there may be danger, either real or apparent, from their use. In such cases, I can readily understand that it may be a difficult matter to introduce the forceps without some amount of bruising, or that the dragging of the child through the narrowed and inflamed passage may produce mischief; and I can, to some extent, sympathize with Dr. Davis, and the authors I have quoted, in their doubt as to whether the case should be further left to the natural efforts, or be treated by the forceps or by the crotchet. But I am altogether at variance with them as to the propriety of allowing such states to supervene. *The head ought never to become impacted, nor the tissues swollen.* If this be guarded against, and the forceps be used while there is abundance of room, then I maintain that there is absolutely no danger from their skilful employment; and I might appeal to the recorded testimony of many writers in corroboration of this, and to that of any one who has used them in such circumstances. Using the forceps in natural labour, and using the forceps in protracted labour, are two entirely different things; but almost every writer has shut his eyes to this consideration. With the latter condition I have at present nothing to do.

* Mr. Young of Edinburgh has described to me a modification of these, which he has devised. The shank is in two pieces, which dovetail into each other. Union is made complete by means of a ring, which passes over the place of junction. These may obviate to some extent the former objection. The instrument was alluded to in a recent number of this Journal.

No doubt it is quite a possible matter to push a blade through the vagina, or to take hold of the cervix uteri as well as the child's head, but such mishaps must not be attributed to the forceps. The responsibility lies at the door of the operator. The simplest procedure may clumsily become the cause of death. "To reason that such effects are the necessary concomitants of the forceps is very much the same as it would be if we were to say that, because, in the operation of lithotomy, nervous or inexperienced operators have cut deeply into the rectal pouch, and becoming confused, have not been able to open the bladder at all; therefore that the operation for stone is one which ought not to be performed." (Mr. Harper, in paper alluded to.) And yet, although a certain amount of neat-handedness is desirable in all surgical procedures, I cannot think that any unusual dexterity is requisite for the safe use of the forceps. It has always appeared to me so perfectly simple that I am at a loss to understand how such unfortunate accidents can have occurred. Yet a few are on record. Are our teachers not to blame? How many students are taught how to use their hands?

That the perineum is liable to be ruptured is one of the most frequent objections. As far as my own experience goes, I cannot admit it as one. It is true that in one case which impressed itself on my mind at the time, the perineum was injured to a considerable extent, but this was owing to the neglect of the precautions necessary to obviate it. The perineum must always be well supported, and great care must be taken to turn the handles of the forceps well over the pubic arch during extraction. On no account should traction be made in the long axis of the body at this stage. In the case referred to, the patient was very restless, and I, being somewhat hurried on this account, failed to bestow proper attention on these points. The perineum was long, and would undoubtedly have given way even had I not interfered, but I imagined that I had made it worse than it might have been. In no other case—and I occasionally make an examination on purpose to ascertain this matter—have I met with more than the slight tear which, as Sir J. Simpson has shown, is the usual accompaniment of natural labour. This latter fact must be borne in mind, for if after using forceps we find the perineum has lost its integrity, the instrument must not therefore be necessarily blamed. I am not sure that straight forceps are not objectionable on account of a risk of this accident. The posterior corner of the point may project beyond the head, and, in turning them over the pubes, this may press injuriously on the already tightly-stretched tissue. With curved forceps this is impossible.—*Edinburgh Medical Journal, Dec. 1866, p. 510.*

82.—A CASE OF HYDATIDS OF THE UTERUS SIMULATING PREGNANCY AND NATURAL LABOUR.

By R. Ley, Esq., South Molton.

The following very interesting case of hydatids of the uterus, which came under my care a short time since, you may think, perhaps, worthy of publication.

A lady, aged 21, who had been married about a year, sent me notice that she wished me to attend her in her first confinement, which, she expected, would take place in about two months; but, as she did not feel well at the time, she expressed a wish that I should visit her. I did so, and found her suffering from hemorrhage from the womb to a trifling extent, for which I ordered an astringent mixture of dilute sulphuric acid, with infusion of roses, and, as there were occasional pains in the back, a dose of morphia at night. In a couple of days she was herself again — the hemorrhage had ceased, and she was quite comfortable.

I was informed that she had seen nothing of the menstrual discharge for seven months, that she felt the child distinctly; and her size appeared to be that of a person seven months gone in pregnancy. The patient appearing quite well, I ceased visiting her, and took no further notice of the case, until about a month afterwards, when I was again sent for, and found all the former symptoms, which were soon relieved by the same remedies.

I then made a more minute examination. The bosoms were enlarged considerably, the areolæ around the nipples were well marked, and the size of the abdomen was natural for a woman eight months advanced. I could detect no fœtal heart, but I have before been disappointed in doing so; consequently I thought little of that circumstance. She informed me that she was positive she felt the child every night on going to bed, and frequently during the day time; that she had suffered very much from morning sickness during the first four months, and that the menstrual discharge had been always regular before the last eight months.

From this time I heard nothing more of her until the expiration of about another month, when I was sent for in a great hurry, the messenger saying that his mistress was in labour, and very ill. On arriving, I found my patient very prostrate from excessive loss of blood, the pains severe, coming on at regular intervals of about three or four minutes, and with every pain a gush of blood. I immediately examined her, and felt what I at first thought to be a placental presentation. The os uteri was

fully dilated, and a pulpy mass was presenting; the hemorrhage was very great; the pulse at the wrist scarcely perceptible, and I thought it a matter of life or death in a very short time. I immediately passed my hand into the uterus with the intention of turning, if a head presented, and delivering as quickly as possible. To my discomfiture and surprise, I found there was no child, but an immense mass in the uterus, a part of which had now got into the vagina, around which I could pass my hand. The uterus contracted as freely and powerfully as if in natural labour, and with some little difficulty I removed it in one huge whole. It nearly filled a large washhand basin, but unfortunately I neglected to have it weighed, so that I cannot tell its exact size. It was an immense mass of hydatids—thousands of watery vesicles, hanging together like grapes on a bunch, with a substance between somewhat resembling the body of a placenta. There were a few shreds of membrane attached to it. After its removal the pains and hemorrhage ceased, the uterus contracted freely, and the discharge continued just as after a natural labour. The secretion of milk came on copiously on the third day, and I never saw the slightest difference in the symptoms from those of a woman who had been confined after the full period of gestation.

After witnessing this case, I should be very careful in pronouncing an opinion that any woman had given birth to a child, forming an opinion from the usual symptoms that present themselves subsequently to confinement, as, after an extensive midwifery practice of thirty years, I have witnessed symptoms in this patient which, had I been previously called in to a similar case after the expulsion of the hydatids, not knowing that such had taken place, and having to judge alone by what I then saw, I must confess would have led me to the conclusion that the woman had been delivered of a child.

In a medico-legal point of view this is a case of great importance, as medical men are so frequently called upon to give evidence in cases of supposed concealment of birth, and to have to rely so much on the secretion of milk, the common lochial discharge, the state of the bosoms, and the contraction of the uterus, in forming their opinion; and, judging from this case, I presume that no practitioner would be justified in giving a decided opinion from any or all of the symptoms described above without some other collateral evidence. I believe such cases to be very rare, and that if any of my medical brethren have seen similar ones they will confer a great benefit to the profession by publishing them, no matter whether they have been deceived in their diagnosis or not.—*Medical Times and Gazette, Dec.* 22, 1866, *p.* 662.

83.—CONCEALED ACCIDENTAL HEMORRHAGE AT FULL TERM; FORCEPS; POST-PARTUM HEMORRHAGE ARRESTED BY ETHER SPRAY EXTERNALLY; RECOVERY.

Case under the care of Dr. Braxton Hicks.

It was a noticeable feature in this case that the pulse was not at all increased in rapidity till the child's head was at the vulva, when it rose to 120 per minute, as might have been anticipated, in cases of blood-loss, and at which rate it continued for some days. Dr. Hicks remarked that this was in keeping with what he had suspected in other cases—viz., that the extreme severity of the symptoms was greatly owing to the impression made upon the nervous system by the great tension of the uterus; in one case noticed by himself the peritoneal coat had been actually cracked. The effect of the ether spray was exceedingly good; as an elegant mode of producing external cold, it commends itself at once, to say nothing of the readiness and certainty with which it can act.

Mrs. D., aged 21, primipara at full term. Having been busy washing the day before, she was taken at eight a.m. with a slight loss of blood, which soon stopped. At nine a.m. she was seen. The os uteri was not larger than a shilling, and the uterus seemed to be acting slowly. The pulse was then natural. As time advanced she became weaker; and was in a state of syncope at eleven a.m., with restlessness and marked pallor. This continued till half-past twelve, when Dr. Hicks saw her. The os was then the size of a five-shilling piece, thin, and dilatable. The head of the fœtus was pressed down firmly into it. The fundus of the uterus was large, tense, and firm. Much distress was evinced by the patient, with jactitation. The pulse was then about normal in beat, but weak, and on two or three occasions during the morning it had been nearly imperceptible. No bleeding externally was then going on. The membrane had ruptured two or three hours before. Dr. Hicks considered that there was a large clot retained at the upper part of the uterus, which was distending it, and pushing down the fœtus. He thought that with frequent stimulants and support she might be left without interference till the full expansion of the os uteri, upon the occurrence of which he advised employing the forceps gently to assist the uterus, now over-distended, and thereby enfeebled. This was done; and in about three hours, when, as she seemed improving, it was thought possible she might get through without assistance. However, no great progress ensuing, the resident obstetric clerk, Mr. Harwood, applied the short forceps, and employing gentle help, the child was soon born. A great quantity of blood and several large clots followed. Pressure was applied to the uterus throughout,

and the placenta followed, with another large clot attached to its margin. The uterus then contracted well, but speedily relaxed. Hemorrhage reappearing, cold was applied externally by the *ether spray*. The uterus instantly contracted, and so continued.—*Lancet, Feb.* 9, 1867, *p.* 175.

84.—ON CONSTRICTION OF THE CERVICAL CANAL.

By Dr. E. J. Tilt, Consulting Physician to the Farringdon Dispensary.

In a paper lately read at the Obstetrical Society I protested against the abuse of the knife in uterine pathology, and against the too frequent division of the cervix; and the discussion that ensued has suggested the following remarks on the pathology and diagnosis of stricture of the cervical canal.

In the onset of such an inquiry one is startled by Dr. Head's assertion, that stricture of the cervical canal is almost always spasmodic, for he asks, "Who has ever seen in the dead-house the cervical canal strictured by hard nodular tissue similar to what constitutes stricture of the urethra?" To this question I have no hesitation in replying that I have occasionally seen in the living subject stricture of the os uteri and of the adjacent part of the cervical canal, when the cervix has a conical termination, as a persistent condition, unconnected with a spasmodic action; and to these cases Dr. Barnes has drawn our attention in a valuable paper. With respect to permanent stricture of other portions of the passage, I ask Dr. Head if he has ever looked for it in the dead-room, or whether he knows this to have been extensively done in any public institution? Patients do not die of cervical stricture, and the womb is not always examined when they die of other diseases. It would be more correct if I said that patients only die of cervical stricture when it leads to retention of the menstrual flow—cases which have been greatly elucidated by the researches of Dr. Bernutz, and in which the stricture was so little spasmodical that the cervical passage was entirely closed in some one part of its extent. This generally takes place at the os externum, but sometimes in its entire length, as in the remarkable case in which Dr. Debrou tunneled through the cervix, and succeeded in making a passage sufficient for the menses to pass, and for conception to take place. I therefore agree with most pathologists in admitting that the cervical canal, lined by a mucous membrane, liable to inflammation and to ulceration, constituted by walls of dense structure half an inch thick, and susceptible of induration, is frequently strictured by a structural development, and not by the spasmodic contraction of the circular fibres of the cervix.

I do not see why cervical spasm may not occasionally exist independent of any organic disease, but I think it generally depends upon some structural lesion hidden in the depth of tissues, beyond our field of vision. Spasm as a complication of some more tangible cause of mischief I freely admit, and I think credit is due to Dr. Head for having more forcibly drawn attention to this element of disease, susceptible of elimination by proper treatment. I feel convinced that many of those who are not sufficiently impressed with this fact will find stricture where others could not, and that this error of diagnosis has caused the neck of the womb to be divided much more frequently than is necessary.

Many reasons militate in favour of the belief that spasm is a frequent complication of cervical stricture. The belief has, in the first place, a physiological basis in the fact of circular muscular fibres entering largely into the structure of the cervix; and there is no good reason for denying them the liability to that morbid contraction which constitutes spasmodic stricture of the œsophagus, of the urethra, and of the rectum. Besides this, the inner portion of the body of the womb is separated from the cervical canal by a muscular ring, which Dr. Henry Bennet has called the os internum. It is the contraction of this circular band that closes the cavity of the healthy unimpregnated womb; so that, even when there is no stricture, the sound passes it with difficulty. The closure relaxes for a time to let the menstrual flow pass, and, during the collapse of connexion, to facilitate the passage of semen to the internal cavity of the womb; and it may be taken as an established fact that the os internum becomes permanently relaxed whenever the body of the womb becomes seriously diseased by one form or another of internal metritis, and by the presence of adventitious growths.

We often bring on spasm of the cervical muscular fibres by introducing the uterine sound; whereas, if previously warmed, it passes without difficulty. We sometimes induce a spasmodic state if we blunder in our first attempts to pass a wax bougie through a strictured cervix. For spasm of the rectum it is recommended to leave in the passage metallic suppositories; and I have occasionally found that the presence of a foreign body in the cervical canal for a short time may deaden its sensitiveness. Lately I have had two patients who suffered severely from obstructive dysmenorrhœa; one for eight, the other for five, years. I was only able to leave in the cervix for a few hours, on alternate days, a bit of No. 2 wax bougie—three times in one case, twice in the other,—when the treatment was interrupted by the menstrual period, which was, nevertheless, painless.

The evidence of spasm as a complication of stricture is shown

by the efficacy of antispasmodic treatment. The great utility of opium, henbane, or belladonna, either given internally or as suppositories by the vagina or rectum during the first twenty-four hours of menstruation, has been taught by the great men who preceded us; and by this mode of practice I have repeatedly enabled patients to menstruate with little or no pain who would otherwise have suffered greatly, because it was difficult to introduce a No. 2 bougie into the cervical canal. Dr. Head has lately stated that he was able to cure the severest cases of dysmenorrhœa by introducing the vapour of chloroform into the womb; and by explaining this mode of practice, and substantiating it by cases, he would help to check the too frequent performance of operations that he considers to have been often uncalled for.

With regard to the seat of stricture, I have found it near the os externum, in the mean portion of the cervical canal, and at the os internum: so I am not surprised that pathologists should differ on this point. I have found it most frequent at the os internum; and this agrees with the experience of Dr. H. Bennet and Dr. A. Farre, and also harmonizes with Dr. Head's opinions respecting the spasmodic nature of cervical stricture.

[It is an imperfect diagnosis which leads surgeons to divide the cervix so much more frequently than is warranted by sound pathology. Inflammation and congestion must be removed by depleting the womb, and by the use of agents which substitute healthy for diseased nutrition of tissues. Many a case of dysmenorrhœa supposed to be obstructive will yield to persistence in the intelligent use of these measures. When all traces of inflammation are removed, it is time to infer that dysmenorrhœa depends upon some obstruction to the free passage of the menses, and this can only be ascertained by probing the wound.]

When a resistant probe is required, I prefer Chassaignac's uterine sound, which is shorter than Simpson's, and only slightly curved at its extremity; but for ordinary use there is nothing better than the well-known wax bougies; they seem to have a peculiar aptitude to pass through the strictured canals, and I have often been able to pass one when I have failed with the uterine sound, the calibre of the two instruments being the same. Another great advantage of using wax bougies is, that it is difficult to do harm with them. If they cannot pass the stricture, they bend and are expelled by the womb, whereas the uterine sound often causes great pain and loss of blood, sometimes inflames the womb or the surrounding tissues, and has been repeatedly known to perforate the womb when used by

inexperienced hands. No one should introduce a bougie, and still less a metallic sound, into the womb, without previously ascertaining its shape and position, so as to know what curve it may be useful to give the probe, and in what direction to introduce it. It must be particularly ascertained, by means of the finger in the vagina and sometimes in the rectum, whether the body of the womb is not flexed upon the cervix: for those who do not detect this condition will of course find great difficulty in passing the sound, or may not be able to do so, and may subject their patients to useless treatment by sponge tents, as I have seen in several instances. It will be obvious that in cases of this kind the wax bougies are of much safer use than the rigid metal rod, and if the wax bougie be carefully brought away, it will, to a certain extent, bear the impression of the curve in which it has been moulded.

With regard to the dangers attending the division of the cervix, they will depend upon the extent to which the division is carried. If the cervix has been divided right and left, down to its vaginal attachments, one cannot be too careful of the patient for the following days; but this is very seldom required. In the majority of cases in which one or two longitudinal incisions, to the depth of two or three lines, are made inside the cervical canal, particularly when the os internum is not divided, or when the os externum and adjacent tissues are thoroughly divided to the extent of three-quarters of an inch, it is quite unnecessary to subject the patient to the fuss and expense of a skilled nurse, or to enforce silence, and keep the patient in bed for three weeks, as if some fearful operation had been performed. Common sense will teach the happy medium between foolhardiness and a ridiculous amount of precaution, and I am desirous of saying this, for I have exaggerated the dangers of the operation in my "Handbook of Uterine Therapeutics." —*Lancet, Dec.* 8, 1866, *and Jan.* 26, 1867, *pp.* 631, 112.

85.—THE TREATMENT OF ENDO-METRITIS BY UTERINE SCARIFICATION.

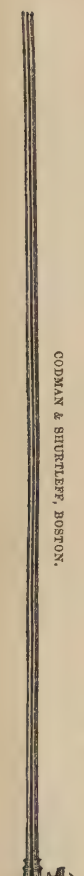
By Dr. Erasmus D. Miller, Dorchester, U.S.

The object of the present essay is not to inquire into the pathology of endo-metritis, nor to discuss special affections resulting from chronic inflammation of the lining membrane of the uterus, to which intra-uterine scarification has proved serviceable, but to set forth concisely the means and method of its accomplishment, and the principles upon which it is based; that a more extended observation may establish, or otherwise,

its claim to be regarded not merely as a *new*, but a recognised principle of treatment in uterine surgery.

The means by which it is accomplished is Lallemand's urethratome, modified by the addition of a probe-point, and an elevation (D) two and a half inches from the point, about the average length of the cavity of the healthy womb. It consists of a steel tube (slightly curved between the point and the elevation), fenestrated on one of its sides, in the distal end of which is an inclined plane. A knife (D), half an inch long and one-sixteenth wide, on the end of a staff, which, when pushed forward, rises on the inclined plane through the fenestra. A sliding knob (B), by which the staff is fixed and the depth of the incision regulated; and a set knob (A), which holds the knife concealed while the instrument is being introduced.

CODMAN & SHURTLEFF, BOSTON.



As the necessity of the case requires that the scarificator be passed to the fundus of the uterus, it is to be presumed that those who condemn the common use of the uterine sound, will, for *apparently* more cogent reasons, condemn the former. But, inasmuch as the scarificator and sound are nearly identical in form, and as the use of either requires the same delicacy of touch, and alike definite conception of the relative size and position of the uterus, and as the pain and danger of inflammation consequent upon the use of the one (the knife being always concealed), is no greater than that of the other, the testimony of Dr. West with regard to the sound will apply with equal force to the scarificator. "The introduction of the sound causes some pain, though this is generally by no means severe, and is almost always of short duration; and *in no instance* that has come under my observation have dangerous consequences resulted from its use, though awkwardness and foolhardiness have, I know, done mischief with this, as with almost every instrument that has been ever invented."—West *on the Diseases of Women, p.* 28.

As a general rule the passing of the scarificator, other things being equal, will be the most readily and safely effected, in proportion as the uterus retains its normal position, and vice versâ; consequently,

if it be deviated or flexed, the first indication will be to reduce it by elevating the fundus, and there to retain it with the cervix resting against the left index finger, along which the instrument is to be guided through the os into the cervical canal. Should its point, as frequently happens, become arrested at the junction of the cervical and uterine canals, the obstruction is not to be overcome with force, but the fundus is to be again elevated, at thesame time the scarificator is held gently but steadily between the thumb and finger, against the point of resistance; or the end may be obtained by pressing the *side* of the scarificator with the index finger firmly enough against the wall of the cervical canal to draw the cervix downwards, by which the longitudinal axes of the body and neck are made to correspond; in other words, the crooked canal becomes straight.

The point of the scarificator having reached the fundus, loosen the set knob, push forward the staff, and having secured it, incise the membrane, by drawing the knife, steadied by the finger, the whole length of the uterine cavity, repeating the operation as many times as the case in the opinion of the operator may require. Occasionally the operation is followed by a free flow of blood, but more commonly it is scanty, continuing for a couple of days and corresponding in quantity to the usual amount of healthy menstruation for a similar period. The pain is slight if the knife is *sharp;* but if dull, is proportionate to the degree of pressure requisite to make the incisions.

* * * *.

Five years have now elapsed since the practice was first adopted, and in the very many instances in which the operation has been performed, I cannot call to mind a single case followed with inflammation to any extent, and in two only has hemorrhage required interference. I therefore regard the mere incising of the lining membrane of the uterus a safe operation.

* * * *

Scanzoni, West, Tilt, Hodge, and indeed most writers upon uterine therapeutics, speak of depletion by scarification, but limit it to the mouth and neck of the womb. Though the effects of inflammation of the uterine and cervical lining membranes are modified by the anatomical peculiarities of each, yet they are governed by the same laws, and to a great extent are amenable to the same principles of treatment. If depletion by scarification is productive of good in inflammatory affections of the cervical membrane, it is a legitimate inference that depletion by scarification of the lining membrane of the uterus will be followed by a corresponding amelioration of symptoms.

We are taught by writers to believe endo-metritis to be a rare form of disease. In the absence of positive evidence its

frequency might be inferred, from the fact that a large proportion of patients refer their ill-health to pregnancy, labour, abortion, interrupted menstruation, &c.; changes affecting far more directly the body of the uterus and its lining membrane, than the cervix and lining membrane of its cavity, and giving rise to amenorrhœa, dysmenorrhœa, menorrhagia, hemorrhage, &c. * * * *

An inflammatory condition of the lining membrane causes also an enlargement of the womb, either by deposition of fibrin (usually called hypertrophy), or by arresting involution of the organ after labour or abortion: the increased weight of which causes deviations of various kinds and degree. These, excepting in extreme cases, or sudden dislocation from falls, blows, &c., the pressure of tumours, or distended adjacent organs, are to be regarded as *symptoms* no less than lumbar and hypogastric pains, leucorrhœa, &c., and are to be treated as such. That the severity of symptoms generally depends upon the amount of inflammation, rather than the displacement, is evident from the fact, that if the former is removed, the latter will cause little or no inconvenience; whereas merely retaining the uterus in its normal position by artificial supports, is at best only a temporary alleviation and in the end a positive injury. In virgins especially should they, as well as the speculum, be ignored, for those cases are rare indeed in which an ordinary degree of tact cannot diagnose by the touch the nature of the disease, and guide the application of remedial means.

Depletion, though the most important, is by no means the sole object to be attained by the treatment now proposed, neither is it intended to exclude other remedies either general or local, but to act in concert with them. * * * *—*Boston Medical and Surgical Journal, March* 21, 1867, *p.* 133.

86.—ON POLYPUS OF THE UTERUS; WITH DESCRIPTION OF A MODIFICATION OF THE ECRASEUR FOR REMOVAL OF INTRA-UTERINE GROWTHS.

By Dr. Lombe Atthill, Fellow of the King and Queen's College of Physicians in Ireland; Examiner in Midwifery, Queen's University.

The following brief details of the history of a patient who was placed under my care during the past summer, by my friend Dr. Head, will, I think, prove interesting, as offering an example of a life saved by the use of the sponge tent and ligature, while, at the same time, it tends to illustrate the difficulty of adjusting the chain of the ecraseur round an intra-uterine polypus.

She was an unmarried woman, aged about 45 years, and when

I saw her was very weak, greatly emaciated, and presenting a remarkably unhealthy appearance ; so much so as to impress the observer with the idea that she must be labouring under malignant disease. She suffered incessantly from sickness of the stomach, and for weeks past had never been free from hemorrhage. She stated that formerly she had been a very healthy woman, but that some eighteen months ago she began to perceive the catamenia, which hitherto had been in all respects natural, to become much more profuse ; then that they returned at short and irregular intervals ; and finally, as already stated, that she was never free from a sanguineous discharge. During the whole of this lengthened period she suffered but little pain, though at intervals severe paroxysms came on, caused evidently by uterine contractions, for they always terminated in the expulsion of clots, after which she experienced relief. She resided in the country, and there tried various remedies, mainly, I believe, tonics and astringents, which had been prescribed for her relief ; but as they failed to check the hemorrhage, she came to town for further advice.

On making a vaginal examination I was surprised to find that the uterus was free from malignant disease. It was low in the pelvis, greatly but evenly enlarged, globular in shape, and very firm to the touch ; the cervix was completely obliterated, and the os closed, admitting with difficulty the point of a uterine sound, which, however, once introduced, passed freely into the cavity of the uterus to the depth of nearly five inches ; the existence of an intra-uterine tumour was beyond doubt, but whether it was a fibrous tumour or polypus had yet to be ascertained. I believed it would prove to be a polypus, basing this opinion on the fact that the uterus was so evenly enlarged, and also on the absence of pain, which, as far as my experience goes, is a nearly universal accompaniment of fibrous tumours of the uterus. As the patient was in a very debilitated state, and losing blood rapidly, it was absolutely necessary to act promptly. I therefore proceeded without delay to dilate the os, and, after a little difficulty, succeeded in introducing into it a small sponge tent ; this, on its removal, was found to have opened the os, so as to admit the tip of the finger ; a larger tent was at once introduced, followed, on its removal, by one still larger, which completed the dilatation of the os to the size of a crown piece ; this process occupied two days. The finger could now be introduced freely into the uterus and swept round the tumour, the attachment of which was very high up and to the right side. The diagnosis of polypus being thus verified, its immediate removal was decided on. Dr. Beatty and Dr. Kidd, who saw the case with me, assisting in operation. At the suggestion of Dr. Kidd, who kindly lent me the instrument, I determined to

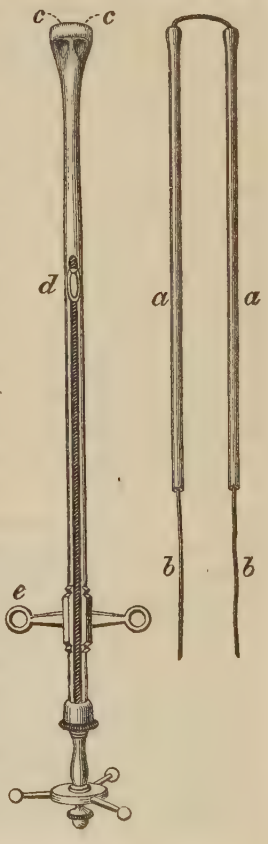
try Dr. Marion Sims' porte chaine ecraseur. The first step in the operation was to endeavour to draw the polypus partially through the dilated os; for this purpose a double hook was fixed in it, but the pedicle was so thick and dense that it was quite impossible to accomplish this; the hook, however, as it served to steady the uterus, was not removed till after the operation was completed; the end of the ecraseur was now introduced into the uterus, and I succeeded, without difficulty, in carrying the chain to the fundus, and consequently beyond the attachment of the polypus; but the moment I began to expand the spring blades the difficulty commenced, for the uterus, probably from its never having been impregnated, was most unyielding; and though I twice succeeded in expanding the blades, the chain on each occasion became displaced, and slipped off the spring blades, and I consequently failed to secure the polypus. I now made an effort to use an ordinary wire ecraseur, carrying the wire up by means of a gum-elastic catheter; this plan, however, failed also, and as it was evident that the patient would speedily sink from the effect of the hemorrhage unless we could remove the polypus, I had recourse to the canulæ of Gouch, and with them, though not without considerable difficulty, succeeded in passing a strong ligature of double whip-cord round the pedicle; once however applied it never slipped; and having been moderately tightened, was secured; the patient was greatly exhausted after the operation; some vomiting followed, which was checked by ice, and a tolerable night's rest was secured by an opiate enema. On the following and succeeding days the ligature was tightened, morning and evening; this was most satisfactorily effected by means of a small winch, which Dr. Beatty has most ingeniously adapted to the end of the connecting rod of the canulæ, and which, when sufficiently tightened, is secured by a screw; this worked admirably, and saved much trouble

Five days elapsed before the ligature cut through the pedicle, and even then the polypus remained in utero. I succeeded, however, in extracting it with a pair of small forceps; it was then about the size of a large egg, but originally must have been much greater; in structure it proved to be purely fibrous.

The woman recovered slowly, but after the lapse of three weeks was able to return home convalescent.

This case, though presenting nothing very unusual, is instructive. We may consider the result eminently satisfactory; for, without doubt, this woman would have died had the removal of the polypus been delayed but a few days longer: but the means by which its removal was accomplished were not what we would desire; for though the dilatation of the os was rapidly effected, my failure in applying, first, Dr. Marion Sims' ecraseur, and

subsequently an ordinary wire one, compelled me to have recourse to the old and objectionable method of the ligature, an operation only justified by the urgency of the case—an operation always disagreeable, and often followed by dangerous and even fatal consequences. In the present instance not only was the inseparable accompaniment of a very fetid discharge present, but I greatly dreaded the occurrence of blood-poisoning or some low form of peritonitis, as the patient had more than one well-marked rigor, and vomiting returned almost daily. I therefore bitterly regretted my failure in applying Dr. Marion Sims' instrument; perhaps the failure was due to my own want of skill, but certainly I did not give up the attempt till I was perfectly satisfied that snare the polypus with that instrument I could not. The instrument, though a very ingenious one, is complicated, and in a case like the present, where the vagina was very narrow and the uterus extremely rigid and completely filled by a very firm tumour, its application became simply impossible. These circumstances led me to consider whether a less complicated instrument could not be devised, which would unite to the great advantages attending the rapid action of the ecraseur the facility of applying the ligature afforded by the canulæ of Gouch: and it occurred to me that if the extremity of the ecraseur were modified, so as to allow the ordinary canula of Gouch to pass through it, we would have a simple and efficient instrument. I have had an ecraseur, so modified, made by Weiss, and append a woodcut to exemplify its application. With the canulæ *a a*, a wire rope, *b b*, of considerable strength, can be passed round the pedicle of the polypus; the canulæ are then to be passed through the opening *c c* in the extremity of the ecraseur: the ecraseur is then to be pushed up, guided by the canulæ, till it comes in contact with the



pedicle of the polypus, filling the place exactly that the connecting rod of Gouch did in his instrument; the canulæ can then be entirely withdrawn, and the wire rope, being attached to the ecraseur at *e* and *d*, the operation is completed, as if we were using an ordinary wire ecraseur. If the engraving given here be compared with that in Dr. Gouch's work on *Diseases of Women*, it will at once appear that it differs from his instrument only in the substitution of an ecraseur for the connecting rod, but a great advantage is obtained in the power conferred by the ecraseur of enabling us to complete the operation at once, and thereby save the patient from the great dangers often following the application of the ligature in the old way: and I think if this simple modification of the ecraseur enables us to succeed in even but a moderate proportion of cases it will be no slight gain, and prove a useful addition to our obstetric instruments. I am well aware that cases will be met with which will resist the action of the wire rope, or break it; but they are rare; and if a strong twisted wire rope be used where the pedicle seems likely to offer much resistance to the action of the instrument, they will prove still more so. In conclusion, I wish to add that I do not desire to depreciate the merits of Dr. Marion Sims' ingenious instrument; but it is too complicated, and I feel that it is inapplicable to many cases. Dr. Braxton Hicks' instrument, too, though possessing the advantage of simplicity, will often fail in carrying the wire rope round the pedicle if seated at a distance from the os, and will always be difficult of application. I think that the modification I have suggested, which in reality is the adaptation of the canulæ of Gouch to the ecraseur, will be found superior, at least in facility of application, to any yet made.

The following case illustrates how little inconvenience may, under certain circumstances, be caused by even large polypi—how slight may be the symptoms, and how nature sometimes effects a cure:—

I was requested by a nursetender to visit a woman, the wife of a cabman, who, she informed me, had been confined under her care three days previously, after a natural labour, of a strong, well-nourished child. I found her to be a healthy robust woman, aged about 30. She stated that when in the ninth week of this her third pregnancy, having exerted herself to raise a heavy weight, she "felt something to give way inside" her, and immediately after perceived a tumour to protrude through the vulva; smart hemorrhage followed, but this soon ceased, and the tumour receded.

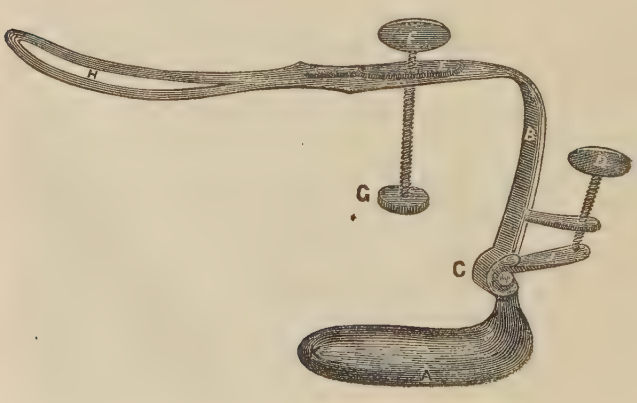
During the remainder of her pregnancy she continued to enjoy good health, and experienced no inconvenience unless she were to take a long walk, or make any unusual exertion, in

either of which cases the tumour would again partially protrude, but it receded again on her lying down ; there was also, on one or two occasions, slight hemorrhage. The midwife who attended her in her confinement, which appeared to have been rapid and easy, did not perceive anything unusual till, on the third day after delivery, she found a large mass protruding through the vulva—when, being alarmed, she came for me. I found, just as she described, a soft mass, of considerable size, lying in and nearly filling the vagina. At first I thought that was a portion of the placenta which had been left behind, it resembled it so much in appearance, but a careful examination proved it to be a polypus, which could be easily traced up to its attachment by a long and slender pedicle to the posterior lip of the os uteri ; some hemorrhage followed the examination. As the woman was so recently delivered I thought it better to defer for a short time the removal of this polypus.

On visiting her again, after the lapse of two days, I found the pedicle shrivelled up, and the polypus itself beginning to decompose. I, therefore, divided the pedicle with a pair of scissors, at a distance of about half an inch from the os, and removed the mass, which proved to be a soft mucous polypus. The woman recovered without a bad symptom.—*Dublin Quarterly Journal, Feb.* 1867, *p.* 60.

87.—SELF-RETAINING SPECULUM.

Dr. Geo. Syng Bryant describes *(St. Louis Med. and Surg. Journ.*, Oct. 1866) a modification of Sims' speculum which seems useful, being self-retaining.



"This instrument consists of a blade *A* and lever *B*, with screws attached, so as to completely fit the lever to the sacrum and back, and to elevate or depress the blade at will.

This speculum operates precisely in the same manner that the Sims' speculum does, with the exception that it retains itself. The blade *A* is introduced into the vagina, and then connected with the lever *B* by the notched joint *C*. At the end of the fenestra *H* in the lever, a strap is attached which is to be carried around the body or waist, and tied before the pad, upon which the button *G* rests, is to be placed upon the sacrum. Above the bend of the lever is a slide *E*, to which is attached a screw with a button *G* at the end. This button rests upon the pad on the sacrum, and the screw is then turned until the requisite amount of tension is made upon the perineum.

The screw *D*, at the lower end of the lever, which rests upon the arm *I*, of the blade, is now turned until the free or distal end of the blade *K*, is elevated or depressed, as may be desired, to the proper degree to bring into view the os uteri and the whole of the vagina, except that portion upon which the back part of the blade rests. This speculum is easily fitted, and its introduction is without pain to the patient. It was made by Leslie & Co., of this city, from a diagram. The accompanying cut is only one-third the size of the instrument."

Dr. B. states that when he contrived this speculum, he was not aware that Dr. Emmet, of New York, had previously modified Dr. Sims' speculum so as to make it self-retaining, but, though Dr. E.'s modification, he states, answers well in lean women, with a thin, weak perineum, it does not do so well in muscular women.—*American Journal of Medical Science, Jan.* 1867, *p.* 282.

88.—PRURITUS PUDENDI SUCCESSFULLY TREATED BY SULPHITE OF SODA.

By Dr. Samuel B. Frizell, of Grangerbury, Ohio.

In September, 1866, I was consulted by a lady suffering from pruritis pudendi following menstruation—accompanied with great irritation and much pain.

Having read of the influence of sulphite of soda on sycosis menti, the idea suggested itself to me of trying the same in this case. I accordingly prescribed for her the following local application: Sodæ sulphis ℥j, aquæ ℥iij, glycerinæ ℥j, M. which which was to be used quite often. In three days no trace of the disease was apparent.—*American Journal of Medical Science, Jan.* 1867, *p.* 271.

89.—HEMORRHAGE FROM FIBROUS TUMOUR OF THE UTERUS; ITS NATURE, SOURCE, AND SURGICAL TREATMENT.

By Dr. J. Matthews Duncan, Honorary Member of the Hunterian Medical Society.

[There can be no doubt that our medicinal resources in cases of hemorrhage from fibrous tumour of the womb are very unreliable. Most of us no doubt can recollect cases in which we have tried almost all the most likely drugs without any benefit whatever.]

In the run of cases of the graver sort, the practitioner has generally reason to doubt whether medicines do any direct good. Plugging the vagina is a mode of treatment useful only in cases of what may be called flooding, or severe hemorrhage, as distinguished from long-continued dribbling. Its use demands much attendance from the physician; and it is extremely irksome and painful to the patient. Of the plan of painting the bleeding surfaces, by the careful injection of a solution of the perchloride of iron by a small intra-uterine syringe, I have some reason to think well; but my experience is, as yet, not matured so as to justify me in speaking unreservedly in its favour. But, supposing the best, intra-uterine injection can only be regarded as a palliative, and is available only if the services of a skilled practitioner are constantly at hand; and even then it requires repetition.

Such being the state of therapeutics in connexion with this important bleeding, it becomes the physician of the diseases of women to study the subject closely. It is, when enunciated, evident to all that, if we have failed empirically to cure a disease, we must, as science advances, apply its acquisitions, and find out a cure based on philosophical grounds. I know that any contribution I have to offer to the science of this subject is very imperfect in itself, and far from being fit to be made the basis of general rules of treatment; yet I am sure that the method I recommend is the right one.

This method consists essentially in investigating anatomically and physiologically the whole history of this bleeding, and applying the knowledge thus obtained to the improvement of its medical and surgical treatment; and, in so doing, taking care to keep ingenious theories and conjectures in their proper subordinate place. I know no author who deliberately sets the subject before the profession in this light, while many do not devote a line to the anatomy and physiology of the parts implicated in the hemorrhage.

Dr. M'Clintock, one of the most recent writers on this disease, may be cited as giving a very correct view of the manner in

which this hemorrhage is treated. "The reason," he says, "for this frequency of hemorrhage in connexion with fibrous tumours of the womb, has never been clearly and satisfactorily accounted for. A great many ingenious theories and conjectures have been put forward by different authors, and I shall not add to their number by proposing another. That the hemorrhage must depend, however, upon some peculiarity belonging to the uterus itself, is at once proved by the fact that hemorrhage is not a symptom of fibrous tumour in any other part of the body. That it does not always, or altogether, proceed from the surface of the tumour, abundant observation has shown; whilst experience teaches us, that the nearer the tumour is to protruding into the uterine cavity, the greater is the liability to the occurrence of hemorrhage."

The bleedings from fibrous uterine tumour may be divided into two kinds, passive and active. Of these the more frequent and ordinary is the passive. For patients suffering from this disease are soon rendered anæmic. Their blood is watery. It oozes away, often copiously enough; it is not actively discharged. It is a loss to the patient, not a relief. All this is evident; but a more important distinction among such hemorrhages remains to be made. They may be capillary, that is, from numerous vessels so small that their ruptured coats escape detection; or they may have their source in considerable venous sinuses temporarily or permanently open.

I have no doubt that, in a majority even of the graver cases, the hemorrhage is from capillary vessels, resembling the hemorrhage of ordinary menstruation, and having its source in the same vessels; that, occurring at monthly periods in women still ovulating, it is a menorrhagia differing from more usual forms of menorrhagia in its peculiar exciting cause. It is well known that, in some cases of fibrous tumour of the uterus, there is no loss of blood whatever. Of such cases I have here no occasion to speak. When extraordinary losses of blood do take place, there are, in varying cases, different explanations easily applicable.

First, The mere presence of the tumour in the organ, acting as an irritant, may increase and prolong the common congestion and hemorrhage of menstruation, or may produce these states apart from the periods of ovulation. This irritation is well known to increase according as the tumour is near the mucous membrane of the uterus, and it is natural to expect this result from its proximity; for, when such tumours become polypoid, or are true polypi, then there is still further increase of irritation and of congestion, and a more frequent attendance of hemorrhage upon the disease.

Second, It is readily conceivable that, entirely apart from irritation of the uterus, and specially of its mucous membrane, a fibrous tumour may cause and keep up capillary hemorrhage by mechanically impeding the returning current or currents of venous blood, as they pass through the uterine wall or broad ligaments, or great veins of the pelvis. This is not only a conceivable, but is rendered in some cases a highly probable cause, by the study of the analagous condition of pregnancy. In the latter condition, tendency to hemorrhoidal congestion and other venous diseases, in parts below the uterus, as well as to uterine bleeding, is not, I believe, always the result of mechanical disorders. But there can be no doubt that it often is caused or aggravated by such bad mechanism, and removed or relieved by the simplest means for mechanically averting the evil, such as the use of posture.

Third, There is another explanation of the great capillary hemorrhages accompanying fibrous uterine tumour, namely, the existence in some cases of greatly increased extent of bleeding surface. Every pathologist is familiar with the very varying conditions of the uterine cavity in this disease. It is often distorted, often elongated, sometimes in addition greatly increased in real (not potential) capacity. Of all these conditions, examples are constantly occurring. Works on morbid anatomy supply numerous drawings illustrative of them. The source of menstrual hemorrhage is this mucous surface, and it is natural to expect that with the increase of its superficial extent the amount discharged should also be augmented. I see no reason for doubting that all the mucous surface of the body of the uterus, or of parts connected directly with it, such as the mucous membrane investing a fibrous tumour, yields the bloody flux.

Lastly, Among causes of capillary hemorrhage may be mentioned presence or misapplication of uterine contraction. Whether this be really influential in cases of this kind I am not prepared to assert. I merely suggest the investigation of the question for physiological inquirers. That, in the second great class of hemorrhages in connexion with fibrous tumour, it has a potent influence, I have no doubt.

Cases in which capillary hemorrhage occurs and in which the above-described causes operate in producing it, increasing it or continuing it, may be classified as cases in which astringents or other medicines administered by the mouth may be expected, at least, to have some power of restraint or arrest. By so classifying them, I do not imply that other means, even surgical interference, may not also be useful as hæmostatic remedies. It is probably to bleeding of this kind that Mr. Baker Brown

alludes when he gives his opinion as to the rationale of some kinds of surgical interference, hereafter described.

The second class of hemorrhages in this disease is that from open venous canals. If the former class finds an analogue in menorrhagia, this class finds its analogue in the floodings of pregnancy, an analogy which future improvements in surgery may extend to the treatment of it.

The great anatomical fact, in this class of hemorrhages, is the close resemblance of the development or hypertrophy of the muscular tissue of the uterine walls, to that occurring in normal pregnancy. The muscular tissue and the uterine sinuses ramifying in it, and especially in the looser layers immediately surrounding the tumour, grow in a closely similar manner. Cruveilhier, whom no author has excelled in graphic description of the anatomy of this disease, decidedly overstates this analogy when he says in his great work on pathological anatomy (text accompanying Pl. vi. livr. xiii.), and elsewhere repeats, that every fibrous tumour which is developed in the thickness of the uterus, has, as a consequence, a hypertrophy and softening which represent exactly the hypertrophy and softening of this organ during pregnancy. The words, "represent exactly" are to be objected to as an error from want of care in statement, for Cruveilhier himself points out differences between the hypertrophy and softening in the two conditions. Much has yet to be done before exactness can be attained in the statement of these differences, but even now some may be noted. The uterine development in fibrous tumour is confined to the proper or muscular layer of the organ. At no stage of the disease (uncomplicated with pregnancy) is there any production of the wonderful decidual hypertrophy of its mucous membrane. The hypertrophy of the muscular coat is often, indeed generally, in interstitial tumours, greater than in a pregnancy of corresponding bulk. At no time before parturition is the proper tissue of the uterine wall seen of the thickness of an inch, as it may be found around such tumours. The same exaggerated size is observed, in many cases, in the uterine sinuses ramifying around a fibrous tumour. Both these differences may be due to the comparative long continuance of the morbid cause of hypertrophy, and perhaps to its essential unnaturalness or morbidity. Lastly, there are great differences in the shape of the uterus and in the thickness of the different muscular layers, in cases of fibrous tumour, otherwise apparently alike.

"The venous vascular network," says Cruveilhier, "between a fibrous tumour and the tissue of the uterus, always considerable, even in fibrous tumours of small size, becomes truly prodigious when fibrous tumours have acquired large volume, and especially when they are œdematous. Thus, around an

œdematous fibrous tumour, of the bulk of the head of an adult, I have found veins of the size of the little finger, filled with coagulated blood." It is bleeding from openings in these vessels that we have now to consider.

The *first* kind of opening that has been found is a simple round aperture, establishing a connexion between the uterine cavity and one of the large sinuses lying in the muscular tissue, enveloping a tumour. A case of this kind has been described by myself. I am not aware of any other quite similar, but the almost accidental discovery of the opening in the autopsy of the case recorded by me, suggests to me the probability that, even in dissections of uteri containing fibrous tumours, such an aperture, unless carefully looked for, may escape notice.

The *second* kind of opening which I have to describe may not differ greatly from that last given. Cruveilhier's description of the only case, which I know to refer to, is not precise enough to enable me to decide its exact nature. Yet I place it as a second kind, distinct from the first and third. It consists of "openings of the uterine sinuses, large, and occupying the lower part of the tumour." Cruveilhier's case furnishes fig. 2, pl. 6, livr. xiii, of his great work on pathology, and is described in the third volume of his Treatise of General Pathological Anatomy.

The *third* kind of open uterine sinuses is the result of partial expulsion of the spontaneously enucleated tumour into the uterine or vaginal cavity.

It may be just to regard these three kinds of bleedings as stages in a gradual process which may be called sanatory, inasmuch as the enucleation and expulsion of the fibrous tumour, if fortunately arrived at, may be regarded as its completion.

First, then, occurs a simple ulceration of the mucous membrane, investing the most prominent part of the tumour as it bulges into the uterine cavity. This ulcer is small, rounded, and establishes an opening into a uterine sinus. Secondly, the ulceration increases, and several openings are formed. Lastly, through the increase of the ulceration, the tumour is partially denuded: uterine contractions follow, and expelling the tumour through the opening in its investing wall formed by this ulceration, produce new lacerations of the sinuses, as they lie at the line of demarcation between the last separated portion of tumour and the adjoining uterine wall.

In all these three forms of open uterine sinuses, bleeding may be the escape of the whole or a part of the blood permeating the open sinuses. This bleeding may be intermittent in consequence of changes in the current of blood through the affected sinuses. The bleeding may cease in consequence of

there being no blood for a time passing through the canals. The bleeding may return in consequence of the erect position, or the excitement of a menstrual period, or efforts in going to stool destroying the retentive power of the abdomen, and producing repletion of the affected vessels, which may have been previously quite empty. This kind of hemorrhage may be arrested by expulsive pains or other uterine contractions, and, consequently, ergot of rye may be a useful medicine in the circumstances. Uterine contraction, if affecting the open canals, may be expected to close them, compressing them between the tumour and the uterine wall. A similar action is supposed by Baker Brown and M'Clintock to be the cause of the hæmostasis following incision of the os and cervix uteri. This operation is said to "permit the fibres of the body of the uterus to contract upon the contained tumour, and thereby to compress the vessels and prevent hemorrhage."

But Cruveilhier points out that expulsive efforts may have, as a result, the laceration of the layer of looser tissue which immediately covers such tumours, and that if great vessels are present in the thickness of this layer, fatal hemorrhage may be the result of the laceration. Such hemorrhage may be repeated with each repetition of the expulsive efforts. This statement of Cruveilhier's does not appear to me to fully describe the matter, and he does not, so far as I know, advance any case, carefully detailed, in proof or illustration of it. I have already said that I regard uterine action as, in some cases, hæmostatic or sanatory. I would ascribe hemorrhage to such uterine action, or efforts as result in some degree of expulsion, a change which cannot go on without laceration, unless it be the consequence of a slow process of enucleation, with advancing ulceration at the line of demarcation between tumour and uterine wall.

The following cases are examples of the various states in which fibrous tumours are found, as true or false polypi, in the genital passages.

Case 2.—In the following case is illustrated the occurrence of a true fibrous polypus of the uterus. It is remarkable on account of the small amount of menorrhagia it induced.

Mrs. —— has never suffered from violent menorrhagia. She has recently had three successive pregnancies which have terminated favourably. Her last child was born ten days ago without any artificial assistance. During labour a globular tumour was felt in the vagina, attached to the right anterior quarter of the cervix uteri, and with very little constriction at the neck forming its pedicle. It was almost sessile and of the size of an ordinary hen's egg. I pulled the tumour gently downwards and excised it with scissors. A little gush of blood followed the excision,

but was easily checked by a moderate amount of plugging. The tumour has an entire mucous and muscular coating, the latter thinning towards the end of the tumour remote from the uterus. She made a perfectly satisfactory recovery.

Case 3.—The next case is one of the somewhat rare kind of fibrous uterine polypus, which is a continuous outgrowth of the proper tissue of the uterus. It is the only case in which, among a large number of operations, I have tied the pedicle of a polypus. The ulcer on the polypus and the appearance of small openings in the venous ramifications on its surface are noteworthy.

Mrs. —— was placed under my care by Dr. Littlejohn. She had enjoyed good health until about three months before I saw her, at which time she had a miscarriage at the third month of pregnancy. Ever since then she had had a copious discharge, which she describes as consisting of blood and matter. A large elongated polypus protrudes partially from the vagina. It might be compared in size and shape to a flattened hen's egg, and its stalk of about an inch in length was nearly about half as thick as the body of the polypus. A considerable artery could be easily felt pulsating in the thick pedicle. I therefore tied it with silk, and then excised by scissors below the ligature. The case required no further care.

The polypus was entirely composed of the proper or muscular tissues of the uterus. It was therefore not an ordinary fibrous polypus, for its stalk was continuous with its substance and with the proper tissue of the cervix.

Near the pedicle of the polypus was a small ulcer on its surface. Under the ulcer, venous ramifications could be seen, having apparently small openings on its surface.

Case 4.—The three next cases are examples of the common spontaneously enucleated, but not disconnected, fibrous tumour, or false fibrous polypus uteri.

Mrs. R., æt. 49, had her last child nine years ago. For seven months past she has had great losses of blood at the monthly periods, and profuse leucorrhœa when bloody discharge is absent. Under these circumstances, she was sent to me by Dr. Paterson of Carnwath. A tumour, about the size of the clenched fist, occupied the roof of the vagina. It was easily pulled down and its attachment cut through. No hemorrhage followed. The woman made a good recovery.

The tumour was a lobulated fibrous mass, destitute of covering by mucous membrane or muscular tissue.

Case 5.—I was called by Dr. Myrtle to Mrs. ——. She was æt. 47, and childless. Four months ago, she suffered considerably from pain in the belly, and ever since then has had bloody discharge. A tumour, as large as a hen's first egg, lies at the

os uteri. I fixed it with a volsella, and removed it with curved scissors. It was a naked fibrous tumour.

The sixth case I shall give as a quotation from the reports of the Medico-Chirurgical Society.

Case 6.—"Dr. Matthews Duncan exhibited a uterine polypus of very large dimensions, which he had recently removed from an unmarried woman, aged 47 years. It measured five and a-half inches in length by four and a-half in breadth, and was of the ordinary fibrous structure. It was, as he had pointed out in former specimens, quite destitute of muscular or mucous coverings, being, in fact, an enucleated fibrous tumour which had been expelled from the uterine wall, its original seat, into the vagina, from which it was removed by operative interference. In this case, it was remarkable that, during all this growth, enucleation, and change of situation, the woman's health had been scarcely disturbed in the least degree. She had irregular vaginal discharges, but, as she had no suffering, she paid little attention to them. Indeed, it was not until the supervention of a cough, which forced the tumour down upon the outlet of the pelvis, and compressed the urethra, giving rise to retention of urine, that she had any complaint to make of suffering in the hypogastric regions."

"It is a mistake to suppose that the difficulty of dealing with these large polypi lies in dividing the (so-called) pedicle. In the present case, the pedicle could not be reached by the finger, until the tumour was removed from the vagina by traction. This was a very laborious process, effected only by repeated and persevering efforts, assisted by the bearing down of the patient. It was, indeed, a difficult labour in a primpara; only, instead of a child's head, a relaxed vagina, and labour pains, there was a fibrous tumour, an undilatable vagina, and traction by hooks fixed in the tumour. There was no difficulty in dividing the pedicle; for it snapped across as the tumour descended, and scarcely a drop of blood issued from it. If the pedicle had not broken, it would have made little difference in the operation; for the extent to which the easily movable uterus is dragged down in such a case is not considerable."

[It is, of course, only in those cases in which hemorrhage is large, grave, dangerous, and recurring, that surgical treatment is necessary. Dr. Duncan has never tried the foregoing plan of Mr. Baker Brown, as it has appeared to him a less satisfactory operation than the partial or complete avulsion which he describes in the present paper. (Mr. Baker Brown has now discontinued the plan of gouging the tumour, as he finds that pretty free division of the os and cervix is sufficient to arrest hemorrhage.)]

Cases, which have come under my observation, appear to me to justify the opinion that surgeons have looked for too rapid attainment of the final removal of the tumour; that, while in some cases, enucleation may possibly be performed at a sitting, or in the course of a few days; in other cases, it may, without disadvantage, occupy months or years. An opening is artificially made in the uterine wall, or forms spontaneously,—the analogue of a rigid os uteri; the process of expulsion, spontaneous or artificially assisted, goes on slowly, the analogue of a tedious labour. It is natural to suppose that the denudation and slow expulsion of a considerable tumour should be very dangerous, apart from the loss of blood accompanying the process. Experience appears to me to negative this opinion. But even were it otherwise, art would not be quite without resources, for, as Lisfranc has suggested, the enucleated portion, or successive portions, may be removed, and the remaining immovable part waited for. I have operated in cases where the tumour had been for a long time, partially, or almost completely enucleated, and in which there was little bleeding, little discharge of any kind, and little constitutional disturbance.

The anxious practitioner can have, in any case, little hope of benefit from medical treatment pursued with a view to diminish, or produce absorption of, the tumour (not mere diminution of it, such as may result from absorption of œdematous infiltration). Indeed, while it is certain that absorption of a fibrous tumour is extremely rare, there is room for doubting whether such an event ever happens.

Case 7.—I may here mention that I have been, as it were, forced against my judgment, by the evidence of a single very remarkable case, to admit the possibility of the complete removal of a large fibrous tumour by absorption. During its progress the patient took small doses of iodide and bromide of potass almost constantly for years; but extensive experience with these remedies does not lead me to attribute to their use this singular good result. The tumour was as large as the fœtal head at the end of pregnancy. It was as easily and perfectly diagnosed as any case could be. There was no doubt ever thrown upon the nature of the case by any of the experienced practitioners who examined it. It had every character and symptom of a fibrous tumour. The patient was long in the most aggravated state of anæmia. Now, there is as certainly no uterine tumour, as there was certainly one formerly. The only method of escape, for me, from the evidence of this case in favour of complete absorption, is, the supposition that the tumour may have become spontaneously enucleated, separated, and discharged, without the consciousness of the patient. This alternative, I confess, considering the cleanly habits and careful

truthful character of my patient, seems more unlikely than the other. Whatever may be the truth regarding this individual case, every one will admit that it is unreasonable, in the present state of therapeutics, to expect absorption of a fibrous uterine tumour.

There is another termination of a fibrous tumour, worthy of study in connexion with surgical interference, namely, its disintegration, decomposition, and expulsion,—a process described with care by Dr. West and others. This is an uncommon ending of a case of this tumour. I have seen more than one example of it, but I believe it to be much rarer than enucleation. I agree with West and M'Clintock in regarding the process as not inflammatory in any stage, so far as the tumour is concerned. It is this termination that Mr. Baker Brown seeks to attain by his gouging operation. As I have already said, I have never practised this kind of interference, preferring in the meantime to push my efforts in another direction. But I must remark, that this treatment, as illustrated by Mr. Baker Brown's cases, published in the Transactions of the Obstetrical Society of London, demands the studious attention of the practitioner.

Dilatation of the Cervix Uteri.—This is the first operation. It may be resorted to with a view to examine the uterine cavity, and the relations of the tumour.

It may be done by the knife or scissors. This method is applicable only when the tumour, or its lower part, is at or near the os uteri, the cervix being developed as in the end of pregnancy. The scissors is best used without any other instrument. The knife, having its edge blunt or guarded up to near its point, may be used in the same way; or a common straight bistoury may be used through a speculum exposing the cervix, or with the aid of the duck-bill speculum of Marion Sims. The extent of the cutting varies; sometimes one, sometimes two fingers, sometimes even the hand, can be passed through the artificial opening. The wounds so made may heal up, to a great extent at least. Little bleeding follows this operation.

Mr. Jonathan Hutchinson says, without qualification, that the danger of hemorrhage from incision is very slight. But I cannot view the matter so, believing that if, in cases adapted for dilatation by tents, incisions are used, then profuse hemorrhage may occur, an event to be most carefully shunned. Dr. Marion Sims gives a good example of this bleeding in his work on Uterine Surgery (p. 111).

The dilatation is best effected by tents, when the upper part of the cavity of the cervix uteri is not opened up as in the end of pregnancy. Sea-tangle tents are to be preferred, and sometimes they produce all needful opening of the cervix. But

when a large amount of dilatation is desired, I have found tangle-tents inefficient, and then, after the tangle-tent, a common conical sponge-tent of suitable size is to be resorted to.

These operations have frequently appeared to me to have, for one or for many succeeding periods, a decided effect in abating the amount of the bloody discharge. Speaking of the use of sponge-tents, Mr. Grimsdale remarks,—"They might, as I had observed in several similar cases before, produce such an altered condition or action of the lining membrane of the cavity as should for a considerable time, probably many months, check the tendency to hemorrhage." Similar opinions as to the beneficial effects of incision of the os and cervix have been published by Baker Brown and M'Clintock.

Before leaving this topic, I have to mention an ingenious suggestion by Marion Sims, which I have found sometimes, in cases of the kind now under consideration, but still more in cases of other descriptions, to be very valuable, especially when the introduction of the first tents (or of a probe) is difficult, or without it, impracticable. It consists in fixing or gently pulling one lip of the uterus by a delicate tenaculum hooking the margin of the cervix. It is held by an assistant. Dr. Sims uses his duck-bill speculum in performing the operation. It can be as well done without it. The tenaculum is used without causing pain; indeed, the patient seems unaware of its application.

The following case illustrates the advantage of dilatation of the cervix. It is interesting on account of the cure of the bleeding, and, to the patient's feeling, the removal of the tumour. It is chiefly extracted from my ward case-book.

Case 8.—Mrs. D., aged 48, has been twice married, and had a child ten years ago. She began, three years ago, to suffer from large discharges of blood, per vaginam, which have returned monthly. At the same time she first observed a tumour in the lower belly, and it appeared to her to be as large then as it is now. Latterly, the bloody discharge has been almost constant for some months.

She is excessively anæmic, complains of ringing in the head, palpitation and want of breath. Auscultation discovers an anæmic bruit in the heart and great vessels. There is in the lower belly a rounded hard tumour, rising half way up to the umbilicus and extending from one inguinal ring to the other. The uterine bruit is well heard over it. Per vaginam, the whole brim of pelvis is felt to be occupied by a hard rounded mass, which combined external and internal examination identifies with the tumour in the hypogastrium. A probe introduced shows the uterine cavity to be behind the tumour.

Dr. Duncan, by means of a sponge tent, largely dilated the cervix and lower part of body of uterus, with a view to incising the tumour; but this was found impossible, as, by no manipulation could he reach a proper part of the tumour, a vesical sound always showing a sort of diverticulum of bladder between his knife and the mass.

Subsequently to these manipulations, and under the use of mineral acids and ergot during the continuance of bloody discharge, of iron and quinine in its absence, she became so greatly improved as to demand her dismissal, after about a month's residence in the hospital. After six months she returned, looking well and robust, but complaining of rheumatism. She said her discharges had ceased and that the tumour was gone. An examination discovered the tumour still present, but apparently so diminished in bulk as to be in the brim of the pelvis, so that it could now be only with difficulty felt by pressing the hand firmly above the pubes. Per vaginam, it was easily found.

It is now two years and a-half since she last came to the hospital; and she promised to return, should any of her disorder again appear.

Incision of the Tumour.—Is resorted to after dilatation of the cervix. This operation appears to me to be useless except while the tumour is still covered by uterine tissue, enucleation not having commenced. It is done by an ordinary sharp-pointed bistoury, guarded by lint or otherwise, except for half-an-inch at the point; and the duck-bill speculum may be used or not according to circumstances. While the operation is performed, the uterus may be fixed by pressure from above, or by the use of a hook or tenaculum fixed in the cervix uteri. The operation is performed through the dilated cervix uteri. An incision is made of depth and length according to the size of the tumour, and the possibility of safely cutting, without implicating neighbouring parts. I have made incisions which I judged to be an inch in length, and at least half-an-inch in depth. I have not seen alarming hemorrhage follow the operation.

I believe these incisions generally heal up, to be opened again, in some cases, by ulceration, should enucleation take place. This healing up may lead to obliteration of some of the sinuses, and so to a restraint of hemorrhage, for a time at least. In the case of Miss M. (Case X.) I believe that the incisions made did not heal up, but that the tumour was very quickly propelled against the opening, so as to commence enucleation at once.

I have preferred incision of the tumour to destruction of its covering by caustics, as has been repeatedly practised.

Incision of the uterus and tumour has been often made the first step of the operation of enucleation, which has been

proceeded to forthwith or after brief delay. The plan I at present am disposed to prefer, is to make the incision or incisions, and, trusting to their beneficial effects, to wait for a period of months or longer, unless the case is extremely urgent or presents characters peculiarly inviting immediate farther interference.

The operation, like the former, is sometimes followed by diminution of the hemorrhages. I have not seen Dr. Atlee's writings on this subject, and I can only give an extract at second hand from them, showing his plan and opinion, both of which appear, to say the least, to be very imperfectly described. "Dr. Atlee (it is said) has described another procedure by which he says the hemorrhages attendant on these tumours have been 'invariably arrested instantaneously;' and this method is, 'during hemorrhage, to pass the bistoury along the vagina into the cavity of the uterus, and make a very free incision into the most exposed portion of the tumour." The words, in which the result of the operation is described, are very improperly used, and diminish the value of Dr. Atlee's statement.

The next case illustrates the use of this method of treatment.

Case 9.—A. W., aged 34, had a child when seventeen years of age. During the last twelve months she had been losing, per vaginam, a great deal of blood. For the last six weeks it has come away in very great quantity. She is now very pale and anæmic, and so weak as to be scarcely able to walk without support. She suffers much from bearing down and weakness in the back. Examination, per vaginam, at once shows the presence in the uterus of a small fibrous tumour.

The cervix uteri was dilated by a sponge tent, with a view to the more thorough investigation of, and, if necessary, interference with the tumour. It was found further necessary to cut through the posterior lip of the cervix to obtain access to the tumour. A deep incision, not above an inch in length, was made into the tumour from above downwards.

She left the hospital two months afterwards. There had been, up till that time, no bleeding beyond ordinary menstrual discharge. She believed herself cured, and promised to come back if her floodings returned upon her. She has not been seen again.

Avulsion of the Tumour.—This operation will be easy, in proportion to the amount of the tumour already spontaneously enucleated. Cases are on record in which the operation has been performed without any assistance from nature being waited for. They have been, on the whole, very unfortunate, and my proposals do not imply imitation of this rapid proceeding. It is to this kind of treatment that Baker Brown probably refers, when he says,—"The enucleation of the tumour is an operation so

fraught with immediate danger, as well as with the risk subsequently of pyæmia, that I have long since discarded it." The operation of enucleation and avulsion is one frequently carried on spontaneously, and merely completed by art.

In a case of probable partial enucleation, there is a question difficult to decide, namely, whether enucleation is really taking place, or whether the tumour is still covered up by a layer of proper uterine tissue. It is important to be able to decide this question, and I know of no simple method of doing it, when roughness of surface and disconnexion of lobes do not indicate it. But I have, in the cases here narrated, proceeded upon the following assumption, an assumption which I think further experience will verify. A tumour bulging, but not enucleated, will every where, at its junction with the general body of the uterus, present smooth rounded outlines. But a tumour partially enucleated will project angularly from the general surface of the uterus.

It appears to me that some advance or propulsion of a partially enucleated tumour will probably form, along with other signs and considerations, such as the size of the tumour, a valuable indication of the feasibility of its removal by avulsion. For unless the tumour is every where surrounded by a comparatively loose layer of fibrous tissue, its movement of advance will be difficult or impossible.

The operation is performed by seizing the tumour with a strong volsella, of which the operator should have more than one pair, so that, when he feels his grasp yielding, he may anew seize the tumour without quite losing hold of it and its slipping back. The tumour is to be dragged; and I have applied all the force which the hold of the instruments would stand in some cases, or which the texture of the tumour would bear without tearing in pieces, in another. I have attached whip-cord to a partially extracted tumour, to aid in the pulling. The pulling should be without jerks, and rapid progress of the operation should not be desired. Sometimes, at the end of the operation a careful twisting of the tumour may be resorted to, when inversion of the uterus is feared, such twisting making an addition to the separating power without increasing the tendency to inversion.

Sometimes the operation is completed by the curved scissors. Sometimes the fingers are used in its progress to repel the uterine wall, or assist the enucleating process. Sometimes dragging alone completes the operation. In cases of enucleation, authors speak of a pedicle or peduncle, and of dividing it; and I have followed their example. But there is truly no stalk or pedicle, only the remaining attachments of the tumour, which are sometimes drawn out, stalk-like, but only inconsiderably so.

I have not seen hemorrhage follow the operation. The difficulty of completing it, especially in cases of bulky tumours, sometimes lies in the perineum. The perineum and orifice of vagina have to be dilated as in labour. An eminent practitioner has recently informed me that, in a case of this kind, in his hands, laceration of the perineum backwards and through the sphincter ani was produced. Dr. Marion Sims records a case in which he incised the ostium vaginæ to permit the extraction of a tumour of this kind; as also Dupuytren. When the tumour is removed, it often is easy to tell, by the character of its surface, how much has been enucleated in the operation of avulsion, and how much had previously been separated. The last enucleated part presents, as Dr. Hall Davis describes, a perfectly fresh appearance. When washed it is yellowish white, and attached to it may be found shreds of muscular tissue. The older enucleated portions are somewhat shrivelled, reddish brown, cannot be washed white, and have appearances such as are characteristic and would be expected, but can scarcely be described. The differences have some remote analogy to those observed in a case of unavoidable hemorrhage, between the earlier and the most recently detached parts of the placenta.

I now proceed to further illustrations of the practice recommended in this paper. In the following case, incision of the cervix and of the tumour were simultaneously practised. The wound in the uterine wall, investing the tumour, seems not to have healed, for the tumour immediately began to descend. Its progress at first was rapid, and was a very interesting subject of observation. Adhesions appeared to form between the enucleated portion of tumour and the adjacent uterine wall, and were repeatedly broken down, to be found again formed on the next examination. The case is chiefly from the ward case-book. Judging from Dr. Duncan's letter concerning the case, I expect to be able to remove the tumour when she next comes under my care, spontaneous enucleation being now apparently far advanced, and so much so as to appear to me to show the possibility of its artificial completion.

Case 10.—J. M., æt. 38, is unmarried, and has had good health till about a year ago. Then her menses began to be irregular, blood being almost constantly discharged. Sometimes, she says, her loss has amounted to a flooding. She has only recently felt a tumour in the lower belly.

Above the pubes a hard mass, as big as the fist, can be felt. Examination, per vaginam, discovers the os uteri in its natural situation, and nearly of natural size. The cervix uteri is flattened out or opened up, no projecting portion being found. The whole lower part of uterus is a large, tuberous, mobile mass. A uterine probe enters the cavity three inches.

Dr. Duncan incised the cervix on either side with a sharp-pointed bistoury. The finger, now easily passed into the uterine cavity, discovers bulging from behind, but not acutely or angularly, a large mass. The lower part of this tumour, opposite the os uteri, was also incised. Little bleeding and no notable suffering was produced by the operation.

Repeated subsequent examinations discovered a gradually increasing descent of the tumour. It projected more and more from the uterine wall, angularly, and descended more and more upon the still expanding cervical portion of the uterus. At the same time it gradually became difficult to feel the mass by pressing the hand over the pubes.

Eight days after the operation, an attack of metritis came on, but was easily subdued.

When she returned home (against my advice), the tumour had so descended that the finger could be passed for at least an inch between it and the posterior uterine wall, while in front lay the uterine cavity.

A little more than a year and a-half after the operation above described, my friend Dr. J. A. Duncan visited J. M. at her home, and kindly sent me the following report :—"She has had several great losses of blood. The os uteri is much dilated, and the tumour projects through it about half an inch, like a side of an orange. It is much increased in bulk, being felt in the hypogastrium of the size of a child's head."

In the following case, spontaneous enucleation and expulsion into the uterine cavity, of one of a set of fibrous tumours, was nearly completed before the patient came under my care. Although tumours were left in the womb, the improvement of symptoms and diminution of discharge, consequent on the operation described, were very remarkable. An intra-uterine fibrous tumour, with a broad sessile attachment, was removed.

Case 11.—Mrs. R., æt. 54, has had no children. She has, for above fifteen years, been weakened by much suffering in the lower belly and frequent floodings. When the floodings are absent, she has constant copious watery discharge. She has consulted many eminent physicians in the diseases of women, but has obtained no distinct benefit. About five years ago, an eminent London obstetrician told her that he would be satisfied if, five years thereafter, she were alive. For the first two months of this year she had unceasing bloody discharges. She is very weak, but does not appear to be anæmic, judging by her face ; her pulse is about 80, and moderately firm.

Two small elongated mucous polypi are hanging from the cervix. The os uteri is slightly patent, and the tip of the finger, pressed into it but not traversing it, reaches something presenting above it. The uterus is very bulky, and with its

tumours is indistinctly felt. through the abdominal wall loaded with fat, occupying a considerable portion of the belly above the pubis, and especially on the left side. A probe enters the uterus three and a-half inches.

Dilatation of the cervix was effected by first using tangle tents, and then a sponge tent as big as the index finger. This operation occupied a day. The tumour was then seized by a strong volsella and pulled down, great force being used. It could not be brought through the cervix without that part being cut through in three places by a probe-pointed bistoury guarded by lint. After it had passed the os uteri, difficulty was again experienced at the os vaginæ, but this was overcome by a few minutes of patient dragging. Its enucleation was completed without any further interference by knife or scissors. It measured two and a-half by two inches, and its examination showed that, during the operation, only its base had been detached from the uterine wall. At this part some long shreds of uterine muscular tissue adhered to it.

The operation was not very painful, and nothing occurred to interrupt her recovery. The mucous polypi were removed by avulsion. Other tumours were left in the uterus, but so high up as scarcely to be in any way reached by the examining finger. After about five weeks, she left Edinburgh, having been for a fortnight at the end of that time without any discharge either bloody or serous.

In the next case, enucleation was little more than well begun when the operation was performed. No previous incision or other operation had induced the commencement of enucleation, which was therefore spontaneous, so far as it had gone, before my seeing the patient. The case is from the ward case-book, and is one of removal of a fibrous tumour, not having a broad sessile attachment, but still almost entirely embedded in the uterine wall.

Case 12.—Mrs. L., æt. 33, married, has had two children, the last four years ago; enjoyed good health till two years ago, when her monthly losses began to be excessive in quantity, and often of long continuance. This state endures, and the loss of blood has been frequently very profuse. She is in a state of great anæmia, very weak, and has much pain in the lower parts of the back and belly.

Dr. Dow of Carnock, who sent the patient to Dr. Duncan, reports that, at one time, a tumour presented at the os uteri, that then the hemorrhage was very copious, and did not lessen till the tumour retreated into the uterine cavity.

Examination, per vaginam, discovers the os uteri patent, admitting the finger. A tumour can be felt, projecting acutely

or angularly at its lower margin from the posterior wall of the uterus in which its mass is embedded.

A strong volsella, whose blades were separately applied as in the midwifery forceps, was securely fixed in the lower part of the tumour. Powerful traction was exerted, and simultaneously a slight twisting motion was given to the volsella. The circle of the os uteri, offering an insuperable obstacle to the descent of the mass, was divided by a probe-pointed bistoury. The tumour was now further dragged down into the vagina, and was found to have been deprived of its attachments, except at its base, where some sawing by the finger-nails was required to detach it.

After its removal, which was effected with only an inconsiderable loss of blood, the large rough-walled cavity in the posterior wall of the uterus, from which the tumour had been forcibly torn, was distinctly felt. In the evening preceding the day of operation, two doses of ergot of rye were administered to the patient, and seemed to be the cause of pains in the back during the night.

The tumour is dense, smooth on the surface, and having only one considerable shred of the proper uterine tissue attached to its base. It is oval, measuring $3\frac{1}{2}$ inches in length, and six inches in circumference at its broader and upper end. The part detached before the operation can be easily recognised. It comprises only one-sixth part of the mass.

This woman's next monthly period was moderate in amount, and she left the hospital in improved health.

In the following case, there can be no doubt that, without the operation, life could not have been preserved. The tumour here also was, for the most part, still embedded in the uterine wall when operative interference was resorted to.

Case 13.—Mrs. ——, the mother of a family, above 40 years of age, had, about three years before the events now to be recorded, been under my care. She was suffering very greatly in health from uterine hemorrhages. The uterus was occupied by a considerable fibrous tumour. At this time I dilated the cervix fully with sponge tents, but did not discover anything unusual, or such as to encourage me to interfere further in the case, otherwise than by medicinal treatment. Since this time the history of her floodings has varied much, but in the months preceding the operation to be described it was extremely unfavourable.

Writing to me in January concerning an attack of hemorrhage in this lady, Dr. Adamson, of St. Andrew's, says :—"The polypus projected into the vagina nearly the length of my forefinger. I got my finger up by its side so as to reach the thin edge of the os uteri, grasping it firmly, and I had to desist from exploring it all round, because it required considerable pressure

to get my finger far enough up to feel the os, and the pressure caused great pain of the back, and was attended with strong effort to vomit. From the history of this attack of flooding, which was preceded for some time by regular uterine pains like labour pains, and which suddenly ceased with the occurrence of a gush of blood, it is my belief that the polypus was protruded by regular uterine contractions, and that it has been gradually retracted. You will see her after the next period."

The next period was as full of danger as the former two, and Dr. Adamson was in fear of an immediate fatal result of the hemorrhage. He told me he could not expect her to survive another such loss, and the subsequent history of the case shows that his fears were well founded.

In the end of January she came to Edinburgh. Her anæmic condition was extreme. Examination, per vaginam, revealed the presence of a large uterine tumour. The os uteri admitted the tip of the examining finger, and the tumour could be felt above it. Menstruation commenced soon after her arrival, and the loss was quite inconsiderable. The blood discharged was thin and watery, and it ceased to flow on the 2nd February. At this time she was allowed to get out of bed ; she was feeling pretty well, and had no pain. During the period she took in the course of each day thirty grains of gallic acid and a drachm of the liquor of ergot. This last was given with the hope of obtaining the descent of the tumour.

On the 3rd February copious bloody discharges began, and she was at once plunged into the most alarming condition. She had frequent faintings while lying in bed. She suffered no pain resembling that of uterine contraction, but, on examination, the tumour was now found in the vagina, bulky and fully occupying the passage. It had descended as the renewed discharge commenced, for an examination on the 2nd February showed the os uteri to be in the condition described as existing at the time of her arrival in Edinburgh.

To give time for preparing the operation, and also to allow of some rallying of the vital powers, should the means be successful, a plug of lint wetted with solution of perchloride of iron was inserted. It proved efficient against the bleeding.

Next day the plug was removed, and the operation proceeded with under the most unfavourable circumstances, the patient being almost pulseless at the wrist. Dr. Graham Weir assisted me.

The plug was removed, the tumour seized by volsellæ and dragged. After many efforts and much laceration of the tumour, it appeared to us almost hopeless to proceed. The os uteri could with the greatest difficulty be reached by the finger, and the uterus was partially inverted. It was impossible to say

certainly where the tumour ended and uterine wall began; yet some indications could be made out, and at these places the fingers were used to aid in separating the tumour and in pushing back the uterine wall. At last, after laborious perseverance, the mass came away. The hole from which it was excavated was in the anterior wall of the uterus, and presented a very ragged surface. Very little blood was lost in the operation, and no plug was used after its completion.

This patient made a slow but uninterrupted recovery. A copious purulent discharge flowed for nearly six weeks. This I attribute to vaginitis caused by the plugging. She never again has had uterine hemorrhage. Fifteen months after the operation she had a miscarriage.

The tumour measured 5 inches by 3. It was not very dense in its structure, having numerous lobules. Several shreds of muscular uterine tissue were attached to it. On the surface of the tumour, and between the lobules, large and freely communicating venous vessels were seen. The largest were about one-sixth of an inch in diameter, contained clots, and opened on the presenting part of the tumour. It was easy to make out that somewhat more than a half of the mass had been separated from its uterine nidus in the operation.

The following case presented such extreme urgency, that I operated without having any reason to believe that enucleation had commenced, and the examination of the tumours after separation showed that they had not been denuded at all. I find it difficult to account for their successful removal, and prefer giving little account of it. It is, however, almost certain that the volsella had got fixed in the tumour, and had at the same time lacerated an opening in the uterine wall for its transmission, and pulled it through.

Case 14.—J. C., aged 45, unmarried, has for fifteen years been very anæmic, and constantly seeking relief from eminent obstetricians in various places for menorrhagia and dysmenorrhœa. She has been several years under my care for the same maladies, and the advantage gained by medical treatment has been certainly very slight. About twenty months before the operation now to be described, and again two years before that time, I made attempts to relieve her by surgical interference. On the first occasion, I incised the tumour, having previously dilated the cervix to reach it as it lay in the anterior uterine wall. This was followed by diminished monthly losses, and consequent improved health for several months. On the second occasion, twenty months before the operation now to be described, I attempted and failed to do what I subsequently succeeded in effecting.

I was driven to the operation by the most urgent considerations. Her life was a burden, and she desired relief at whatever risk. Twice her life had been for many days despaired of, and she was living almost entirely in bed, when I resolved to try a third time.

The description of her anæmic condition at this time cannot be exaggerated. Her pulse was scarcely to be felt, and was quick. Her tongue and fauces were as pallid as her skin. She had no appetite, and subsisted on the smallest possible amount of liquid food. Anasarca of the whole body was present, and though lying in bed her lower limbs were as swollen by a pretty dense œdema as they are seen to be under any circumstances. She had considerable hydrothorax of both sides, and great fits of breathlessness, with orthopnœa, which looked like impending dissolution.

Assisted by Dr. Linton, I proceeded as I shall now describe, premising that, in consequence of the hardness and length of the perineum, every step of the operation was very difficult. In addition, she was so fat that the size and relations of the tumour could not even be guessed at with any exactness. I had previously dilated the undeveloped cervix and cavity of the uterus with tangle tents, but nothing like a tumour or projection, only a slight bulging elevation, could be felt in the anterior wall of the uterus, in which other means of examination showed the lower part of a tumour to be. Into the lower part of this elevation I fixed a volsella, and as it slipped, I seized and pulled by another, or by a hook. The violence used was great, as much as the tissues would bear. As I did not see that any other proceeding was available, we continued laboriously pulling with all the force we could apply. The volsellæ were moved to new and higher holds as a mass descended; and finally, a clean enucleated fibrous tumour came away. It measured 2 inches by $1\frac{1}{2}$. It was probably only a lobe of a mass larger than itself. I therefore renewed the operation. But the next mass began to tear, and we felt that the root, not thicker than a finger, and having its attachment high in the uterus, would soon be entirely severed. I divided it with scissors, getting away a fibrous mass measuring $1\frac{1}{4}$ by 1 inch. Very little blood was lost, and the operation was finished. The examination of the tumours discovered no indication of their having been even partially denuded before the operation.

The operation was painful, but she did not seem to suffer after it, and gradually improved in health. In a few weeks she began to get up, and to go about her house. Since this time—fifteen months ago—she has never been confined to bed for a day. The monthly periods are regular and moderate. She has

almost always a slight watery discharge, tinged often with blood.—*Edinburgh Medical Journal, Jan. and Feb.* 1867, *pp.* 628, 706.

90.—OVARIOTOMY: PEDICLE SECURED BY SILVER WIRE AFTER THE FAILURE OF THE ACTUAL CAUTERY TO ARREST HEMORRHAGE.

By Dr. J. Marion Sims, Knight of the Legion of Honour; Physician to the Women's Hospital, New York, &c.

[The patient was an American lady, 52 years of age. She had a multilocular ovarian cyst, probably without adhesions.]

An incision, three inches long, was made in the usual way through the abdominal walls, and the cyst was exposed. The trocar was introduced, and emptied one of its largest compartments of about ten pounds of a dark brown serous fluid. Five other compartments of the cyst were in turn punctured; but in two of them the fluid was too thick to flow through the tube of the trocar. The other three gave vent to about twenty pounds more of fluid. To expedite the operation, the external incision was enlarged to the extent of five inches which allowed me to extract the remainder of the tumour *en masse*. It was attached to the right broad ligament. The pedicle was short and broad. When spread out in the clamp, it measured four and a half inches in width. Its veins were large and tortuous. It was severed by the actual cautery, according to the plan of Mr. Baker Brown.

On removing the clamp, blood began to ooze from the end of the line of cauterization farthest from the fundus uteri. The bleeding seemed to be chiefly from the open mouths of the large veins. An inch of tissue including the veins was encircled in a loop of silver wire, which was drawn tightly, twisted firmly, and cut off close to the twist. The mere mechanical manipulation of doing this unfortunately tore open the whole extent of the line of cauterisation, and blood oozed out from every part of it. To secure this long line (nearly four inches) of bleeding surface, it was necessary to introduce five other loops of silver wire, embracing as many segments of the bleeding pedicle, each of which was twisted separately and cut off close, as before described. The uterine artery spouted furiously, and required a special ligature. After the bleeding was wholly controlled, the pelvic and abdominal cavities were thoroughly cleared of the fluid that unavoidably escaped into them, and the external incision was closed by a continuous suture of silver wire. The whole of the peritoneal membrane, whether lining the walls of the abdomen or investing the intestines, was deeply congested,

and had a red granular appearance. The tumour had no adhesions; and, notwithstanding the appearance of the peritoneum, there was no unusual amount of serum in its cavity. She was fully under the influence of ether only during the early period of the operation, and recovered easily from its immediate effects. Reaction was established in two hours with a pulse at 108, which at midnight fell to 96. She vomited only twice during the afternoon, and was wholly free from pain or suffering of any kind.

About two hours after the operation, the urine (fourteen ounces) was drawn off by the catheter; but after this she passed urine spontaneously and freely. The bowels were moved spontaneously on the third day. She slept every night without anodynes; and took nourishment with a relish from the first day.

There was nothing whatever worthy of remark during the convalescence. The external wound healed perfectly by the first intention. The silver sutures were removed on the tenth day after the operation. She sat up and walked across the room on the eleventh day, and on the twenty-second day she returned to to her house in Paris perfectly well.

The solid part of the tumour removed *en masse* weighed eleven pounds, and the fluid thirty-two pounds. Dr. Johnston and others present estimated the loss of fluid during the operation at eight or ten pounds. The whole amount was probably near fifty pounds.

In one of the cysts the fluid was straw-coloured, in another coffee-coloured, in one it was dark as sugar-house molasses; in others it was of the consistence of jelly.

The operation of removing the tumour lasted twenty minutes, and the time taken in securing the pedicle was about twenty minutes more.

Ever since the first introduction of the use of silver sutures in 1849, I have advocated the application of the metallic ligatures to the pedicle in ovariotomy. In 1858, this view was held forth in my paper, "On Silver Sutures in Surgery." Since then, I have carried it out in practice.

Dr. Nélaton performed the operation of ovariotomy in Paris in May 1864, on a patient of Sir Joseph Olliffe, and kindly allowed me to secure the pedicle with silver wire. It was transfixed by a double wire, which was cut in two, and each half was twisted tightly on opposite sides of the pedicle. This was then cut off near the ligatures and returned into the cavity of the abdomen, and the external wound was closed by silver sutures. Unfortunately for the poor patient, she died on the fifth day after the operation, of blood-poisoning from peritoneal exudation. But fortunately for science, a *post-mortem* examination

showed the metallic ligatures entirely embedded in the tissue of the pedicle, and so perfectly sacculated that I was obliged to cut into its structure to find them.

The wire had cut into the tissue, and this had healed behind its track, and thus it was wholly covered up and hidden from view. I was able to foretell what would be its method of action by observation from analogy. In 1850, by means of a silver wire, I made the effort to strangulate a warty excrescence on the cheek of a lady sixty years old. It was of about the size of the end of the little finger, and projected at least half an inch above the surface. It was hard to the touch, and of a reddish tint. On tightening the wire at its base, the top became of a deep purple colour, showing that its circulation was momentarily arrested. On visiting my patient the next day, I was surprised to find the excrescence of its original colour, without the least sign of a disorganising process. On the contrary, its circulation was going on as vigorously as before the application of the wire. On a minute examination, I found that the wire had cut a bed for itself entirely around the structure embraced, and that the tissue so cut had overlapped the wire and healed over it, thus encasing or sacculating it completely, and this within the short space of twenty hours. Of course it was a mistake to apply the wire at all with the idea of producing a slough, and it was clipped and drawn out.

Notwithstanding this lesson, I made the mistake again of applying a silver wire to hemorrhoidal tumour with the expectation of strangulating it. The strangulation was only momentary; for, two days after the operation, I found the hemorrhoid presenting almost the identical appearance that it did before the operation, while the wire was partially embedded in its structure and securely held there by a cicatrising process such as that described in the case above. The experience gained by these two experiments gave me the idea of applying the wire to the pedicle in ovariotomy, and of explaining its probable action; while the fact observed in the case of M. Nélaton and Sir Joseph Olliffe demonstrated the truth of what was so naturally inferred.

It was a great improvement in the operation of ovariotomy when, a short time ago, the pedicle was drawn out and secured by a clamp externally to the abdomen, instead of being tied with a cord, as formerly, which was then allowed to hang from the lower end of the external wound, thus acting the part of a seton and exciting the action which it should have been our object to prevent. But I think a still greater advance is made, when we can secure the bleeding pedicle in such a way as safely to replace it within the abdominal cavity, and thus allow

the external wound to be healed throughout its entire length by the first intention.

For this desirable end we now have two methods; the one of treating the pedicle by the actual cautery, so successfully practised by Mr. Baker Brown; the other by means of the metallic ligature.

The actual cautery does not always succeed; and the case above described clearly proves that we have a safe and sure resource in the silver ligature.

At a recent discussion at the Obstetrical Society in London, the fact was elicited that the actual cautery failed to arrest the hemorrhage in one-fourth of the cases operated upon by this method by Mr. Harper. It is well to know this, and to be prepared for such a contingency.

In Mr. Baker Brown's last thirty-nine operations he has used the actual cautery, and has lost but five cases.

I am well satisfied that the actual cautery and the metallic ligature are at present our safest means of securing the pedicle in ovariotomy.

No surgeon can expect to perform this operation successfully who is in the constant habit of making dissections or *post-mortem* examinations, or of dressing erysipelatous or other poisonous wounds. And it is quite as essential that each of his assistants, even the meanest sponge-washer, should be as clear of all contaminating influences. Mr. Spencer Wells, M. Maisonneuve, and others, having observed that very many deaths after this operation are due to blood-poisoning, as a consequence of a sero-sanguineous exudation into the cavity of the peritoneum. When this is the case, the proper course is to puncture the peritoneal cavity through the posterior vaginal *cul-de-sac*, evacuate its contents, and keep it drained and even washed out. This idea and operation are due to my distinguished countryman, Dr. Peaslee; and I believe it has been carried into practice also by Mr. Spencer Wells.—*British Medical Journal, Jan.* 19, 1867, *p.* 50.

91.—SEVEN CASES OF OVARIOTOMY, IN WHICH THE PEDICLE WAS LIGATURED IN TWO PORTIONS AND DROPPED BACK INTO THE ABDOMEN, THE ENDS OF THE LIGATURES HAVING BEEN CUT OFF.

Under the case of Thomas Bryant, Esq., Assistant-Surgeon to Guy's Hospital.

During the last two years Mr. Bryant has had many cases of ovariotomy, and in the majority he has adopted the practice of ligaturing the pedicle, cutting off the ends of the ligatures, and dropping the whole into the abdomen. The following cases are

the last series he has had at the above hospital, and the success which has attended the practice is somewhat satisfactory, one case in seven only having proved fatal.

Case 1.—*Polycystic ovarian tumour; ovariotomy; fatal result.*—Ann B., aged 25, admitted on Nov. 21st, 1864, under the care of Dr. Hicks and Mr. Bryant. She was a married woman, the mother of four children, and had had good health till one year previously, when she first observed her abdomen to enlarge, and from that time the increase had been rapid. On admission, a polycystic ovarian tumour was diagnosed. She was tapped, and twelve pints of fluid drawn off. She convalesced, and left for the country; but she returned in two weeks as large as ever. Ovariotomy was then proposed, and on Jan. 10th it was performed. A moderate incision was made, and the tumour drawn out, no adhesions existing. The pedicle was long, and ligatured in two parts, the whole being dropped in, and the wound closed. A quarter of a grain of morphia was then subcutaneously injected. Peritonitis subsequently set in, and the patient died on the eighth day.

Case 2.—*Polycystic ovarian tumour; ovariotomy; recovery.*—Mary L., aged 43, a stout and healthy woman, was admitted, under Mr. Bryant's care, on December 14th, 1864. She was married and had nine children, the youngest being six years old. Nine years previously she accidentally discovered a swelling on the right side of the abdomen; it was painless, and caused her little distress; its growth was gradual, but since her last confinement, six years ago, had increased more rapidly. When admitted, her health was good. Her abdomen was very large and tense, measuring forty-nine inches in circumference. A single ovarian cyst was made out. Ovariotomy was performed on Jan. 25th, Drs. Oldham and Hicks assisting. The abdominal incision was about four inches in length. There were no parietal adhesions. The cyst was readily extracted, and the pedicle ligatured in two portions and dropped in. A long and firm pelvic adhesion as large as the pedicle was then treated in the same way, and the wound closed. No bad symptom followed, and the patient rapidly convalesced.

Case 3.—*Multilocular ovarian tumour; ovariotomy; rapid recovery.*—M. L., aged 17, was admitted, under Dr. Oldham and Mr. Bryant's care, on April 20th, 1865, having been sent up by Dr. Corbett, of Kingston-on-Thames, for operation. She was single, and had always been healthy until two years ago, when she first observed her abdomen to enlarge. In September she was tapped at St. Thomas's Hospital, when twenty-four pints of a dark-coloured fluid were drawn off. In two months she began to refill. On admission into Guy's, the abdomen measured forty-one inches in circumference; it was very tense. On May 20th

ovariotomy was performed, a long incision being made. Extensive parietal adhesions existed, which were readily broken down with the exception of two, which, with one large omental adhesion, were ligatured and divided, the ligatures being cut off. The pedicle, which was a short one, was ligatured in two portions and dropped in. The wound was closed with silk sutures. Everything went on well after the operation, and rapid convalescence was established.

Case 4.—Monocystic proliferous ovarian cyst; ovariotomy: recovery.—Sarah P., aged 25, was admitted on Oct. 21st, 1865, under the care of Dr. Oldham and Mr. Bryant. She had observed her abdomen to enlarge for three years, but its increase had been slow. She became pregnant, and was confined two years since; and after that period the growth of the disease was more rapid, its increase being attended with pain. On Nov. 1st ovariotomy was performed. A small abdominal incision was made, and the cyst was readily withdrawn, no adhesions existing. The pedicle was ligatured in two portions, and dropped in. The wound was closed with silk sutures, and a suppository of opium given. Recovery went on rapidly after the operation, and in one month she left well.

Case 5.—Proliferous ovarian cyst: ovariotomy; rapid recovery.—Mary A. B., aged 27, a married woman, the mother of four children, was admitted on Dec. 10th, 1865, under the joint care of Dr. Oldham and Mr. Bryant. After her second confinement, four years ago, she observed her abdomen to be large. She then consulted Dr. Oldham, who discovered an ovarian cyst, for which she was tapped, a pailful of clear fluid being drawn off. Twelve months ago, after her fourth confinement, the cyst began again to fill, and since that time it has rapidly increased. She is a thin pale woman, and her abdomen is much distended. Ovariotomy was performed on Jan. 3rd, 1866. A moderate incision was made. A few parietal adhesions existed, which were readily torn through. Omental adhesions also existed. The tumour was extracted, and the pedicle ligatured in two portions and dropped in. The wound was closed by deep and superficial silk sutures, and a suppository administered. On Jan. 7th the stitches were removed, the wound having healed; and on Feb. 1st the patient left well.

Case 6.—Polycystic ovarian tumour; ovariotomy: rapid recovery.—Margaret C., aged 22, was admitted, under the care of Dr. Oldham and Mr. Bryant, on April 20th, 1866, having been sent in by Mr. Francis Toulmin, of Hackney, for operation. The patient was a single woman, and had always had good health. She had observed her abdomen to enlarge for three months. On March 21st she was seen by Dr. Oldham, who suggested tapping, when seven pints of a thick fluid were drawn off. She rapidly

refilled. When admitted she was larger than ever, and measured thirty-six inches in circumference. On May 16th ovariotomy was performed, a moderate incision being made. Some parietal adhesions existed, and were torn through. The tumour was readily removed, and the pedicle ligatured in two portions, the ends of the ligatures being cut off, and the whole dropped in. The wound was closed with silk sutures. Rapid recovery followed the operation.

Case 7.—Monocystic proliferous cyst; ovariotomy; rapid recovery.—Harriet B., aged 19, a single woman, was admitted, under the joint care of Dr. Oldham and Mr. Bryant, on Nov. 29th, 1866, with ovarian dropsy. She had observed the tumour for about nine months; her catamenia having been irregular and profuse for that time, and much pain having existed in her right groin. Her abdomen had steadily increased in size. On Dec. 12th, 1866, ovariotomy was performed. A moderate incision was made. No adhesions existed. The cyst was readily drawn out, and its pedicle ligatured in two portions. The wound was then closed and secured by silk sutures, the peritoneum having been touched only by the scalpel. No single bad symptom followed. On the fourth day the sutures were removed, rapid recovery having taken place.—*Lancet, Jan.* 19, 1867, *p.* 80.

ADDENDA.

95.—ON THE REMEDIAL USES OF THE PRUNUS VIRGINIANA.

By Dr. Clifford Allbutt, Physician to the Leeds General Infirmary.

[The Prunus Virginiana, or American Wild Cherry, has a special power of giving tone and calmness to the arterial system. The rapidity and intensity of the heart's action are lessened.]

I have found the wild cherry useful, not only in cases of cardiac disturbance, but also of general nervous excitability, of "atonic" dyspepsia, and of intestinal irritability. It seems, however, to have a more special bearing upon the arterial nervo-muscular tissues, as digitalis also has, and in proper cases it comes as a valuable substitute for digitalis when this medicine is ill borne. Many sedatives, as you are aware, tend to cause nausea or vomiting in those who take them, as do, for example, opium, chloroform, tobacco, and many others. Digitalis in its degree shares with them that peculiarity; and you will find in practice many persons who cannot bear digitalis, even in small doses, on account of the nausea which it causes in them. We may often avoid this ill effect by judicious exhibition and combination, but sometimes no care can prevent it. In such constitutions or states of disease the wild cherry is of great value. In doses under half a drachm of the tincture, and under one ounce of the infusion, it is, so far as I can tell, invariably well borne. On the other hand, it is not equal to digitalis in the special relief which we need in extreme cases. It is, indeed, rather to be used in the continuous treatment which follows the removal of the worst symptoms. The wild cherry is not an heroic remedy, and yet it is not an insignificant one. Moreover, it is a perfectly safe one. I have never seen a case among the many which I have treated where the infusion or tincture of the wild cherry has been followed by any poisonous consequences. On the contrary, I seldom prescribe it in suitable cases without receiving a spontaneous tribute from my patient to the success of the medicine. In doses larger than those I have mentioned, however, I have found that the valuable properties of the drug were not obtained, and, indeed, that in more than one instance increased distress, and some-

times even sickness, seemed to result from the use of it. When doses beginning at fifteen or twenty drops of the tincture and half an ounce of the cold infusion do not make some change for the better, I now lay aside the medicine till a more convenient season. Medicines, like mortals, are not at all hours infallible.

[It is in mitral regurgitation, perhaps, that the wild cherry is the most valuable. Here, a slight mal-adaptation may cause most painful disturbance. Steel is not often admissible in any stage of this disease.]

Miss E. W., aged 27, subject to palpitation on exertion for eighteen months, also to cardiac oppression, spasmodic dyspnœa, occasional dim vision and fainting sensations; slight cough of some weeks' standing; occasional pain and puffiness about the ankles towards evening; bowels irregular; urine often scanty and high-coloured; has spit a little blood once or twice. Consulted me last August on increase of these sufferings. I found mitral regurgitration; her complexion was dusky, her lips bluish, her pulse small and irregular. Her father died, about the age of 45, of heart disease. Ordered salines and diaphoretics to relieve congestion; bowels kept free. ℞. Tinct. pruni virginianæ ℥xx.—xxx. five or six times a day, as required. The next day but one, on seeing her, she expressed to me much gratitude for the "drops," which gave her marked relief. After omitting the other medicines, the drops were continued, and she improved daily. The heart became much more quiet, the pulse more certain and full, the cough disappeared, and she became able to go up and down stairs without any great dyspnœa. ℞. Pot. iodid. gr. iv.; sp. æth. nit., tinct. aurant., āā ℥ss.; inf. pruni virginianæ ℥vij. Three times a day. From this time her improvement became rapid, and in seven weeks from the beginning she undertook a somewhat fatiguing journey with my consent.

The next case is from my out-patient list at the Hospital. J. G., aged 45, mill-hand, complains of cough, occasional blood-spitting, and of wearing pain in left arm; also of palpitation, dyspnœa, and occasional slight anasarca. There is decided, but not unmanageable, venous congestion of the viscera, &c., a poor and irregular pulse, and a "mitral regurgitant murmur." ℞. Infus. pruni virgin. ℥j., three times a day. The week following the patient paid a spontaneous tribute to the power of the medicine, and in six weeks had regained considerable ease.

I might tell you of twenty such cases. In nearly all the patients were left to give their own opinion, and, in addition to ease at the heart, they often expressed much pleasure at the restoration of appetite. Loss of appetite, probably due to

congestion of the capillaries of the stomach, and consequent suppression of gastric secretion, is a frequent symptom of heart disease affecting the venous flow.

I shall add some observations on the value of prunus virginiana in a few other diseases. In *chronic bronchitis*, depending upon or accompanied by valvular disease or dilatation of the chambers of the heart, I have found it of great service. Such cases are, you know, but too common. In them I always found my best remedy in digitalis; I now find the prunus virginiana do nearly as well—I have often thought quite as well—in calming the cough and so-called asthma, and it is infinitely preferable in that it also improves the appetite and strength, and may be given continuously and fearlessly. These patients are among the crosses of the hospital physician; incurable, but capable of passing relief, they hang on winter after winter, gasping forth their tale of inevitable sorrows. One of these unhappy old fellows, whose daily food was gin and sulphuric ether, and every one of whose weeks was to have been his last for many a month, pleaded so hard for some medicine of supernatural virtues, that, from whim rather than calculation, I ordered him twenty drops of tincture of wild cherry every two or three hours. The old gentleman did not appear for a fortnight; then he appeared, as usual, and I had resigned myself to the invariable beginning—"Eh, sir, I thought last week I should have"—when, to my amazement, he concluded—"recovered altogether. Them drops made me over again, and I thought I shouldn't 'a come no more, but they only lasted me ten days, and now I'm as bad as ever." It is needless to say that he was supplied with an infinite series of drops, and every week he invented some new form of panegyric upon their virtues. He has long withdrawn his injurious opinions of the science of medicine, and of my skill in particular; he has magnanimously overlooked the illimitable iniquity of the Poor-Law guardians, and at last he informed me he was about to begin life afresh as a retail dealer in oranges. In all seriousness, I believe that any one who gives the tincture of prunus virginiana in these forms of bronchitis will not be disappointed. Bronchitis depending upon scrofulous, gouty, or any such affection of the mucous membrane of the lung, has nothing in common with the former disease except coughing and spitting, and these cases have their own remedies. I have not found the wild cherry infusion of much service in the dyspepsia of phthisis—that is, of no more service than any other vegetable bitter. It is valuable, however, in these and all other cases where much nervous susceptibility is present with vascular irritability. Generally speaking, I use the infusion when I want the so-called "tonic and stomachic" effects of the medicine, and

the tincture when I want more especially to relieve distress in the chest. I think the distinction is worth noting.

In conclusion, I may say that in many cases of the kind remediable by prunus virginiana I have tried other vegetable bitters with hydrocyanic acid added. I have not found this imitation to answer, and I believe, therefore, that the good effects of the drug depend upon something more than the prussic acid it contains. I shall refer those who wish to gain some knowledge of the botanical and chemical characters of the prunus virginiana to the excellent description by Professor Bentley, published by him in the new series of the *Pharmaceutical Journal*, at page 97 of Volume V. My sincere thanks are also due to Mr. Reynolds (of the firm of Harvey and Reynolds, 13, Briggate, Leeds), for his extremely valuable aid in this, as in all instances where I have investigated the properties of drugs. I am sure he will gladly answer any questions concerning the prunus virginiana and its preparations.—*Medical Times and Gazette, Feb.* 16 *and March* 2, 1867, *pp.* 161, 217.

96.—ON THE PHYSIOLOGICAL AND THERAPEUTICAL ACTION OF NARCEIA.

By Dr. A. Eulenburg.

Dr. Eulenburg employed in his experiments the hydrochlorate of narceia in the dose of one-sixth to one-half a grain when administered internally, but in that of one-eighth to one-fourth of a grain when used in hypodermic injection, in which form of application the successful results of the treatment were well observed. He never saw any unfavourable symptoms after these doses, such as headache or gastric effects, which usually follow the use of morphia when given in corresponding doses. Among the physiological effects of the operation of narceia, the most striking and most constant is the diminution of the frequency of the pulse, with a corresponding weakening of the flow of blood, and sometimes a subsequent slight acceleration of the pulsations. The respirations were sometimes temporarily retarded, and occasionally they were rather accelerated, but generally no effect was observed on the temperature of the skin. On the extremities of the sensitive nerves in the skin, narceia acts in an analogous manner to other narcotics; but Dr. Eulenburgh could discover no effect upon the urinary organs. As to its therapeutical effects, he employed it with good results as a sedative and hypnotic in the most varied diseases where local irritation, attended with great pain or general excitement, required the use of narcotics. Its operation was also favorable in certain cases of peripheric neuralgia, and in one case of

hysterical convulsions with spastic contractions, in which form of disease morphia is of very little use. Narceia is, therefore, a very valuable remedy in all those cases in which morphia is either not tolerated from the beginning, or in which it has lost its effects from long use.—*Schmidt's Jahrbücher.*—*British and Foreign Medico Chirurgical Review, April* 1867, *p.* 525.

Narceine is coming into great fashion amongst the French to replace morphia. The dose generally given internally is from a sixth to half a grain. At the outset it diminishes the pulse, but subsequently accelerates the pulsations. It does not seem to produce constipation, but rather a free action of the bowels. It is said to retard menstruation. Dr. Eulenberg prefers it to any other narcotic, and gives it in neuralgia, in painful affections generally, and articular diseases, iritis, cystitis, and orchitis, stating that it produces sleep, "which is soft, tranquil, uninterrupted, and followed by a quiet awaking." Narceine is reported to be preferable to morphia as a general rule, and to act effectually in those cases in which morphia fails.—*Lancet, Feb.* 16, 1857, *p.* 220.

97.—ON THE THERAPEUTICAL PROPERTIES OF NARCEIN. By Dr. Oettinger.

Dr. Oettinger performed sixteen experiments with solution of narcein on healthy persons, the drug being injected beneath the skin, and in some cases administered internally, at the same time, in the dose of half a grain to one grain and a half. All the experiments showed that the injected solution caused severe burning pain, and an inflammatory swelling remained for a long time after, passing into suppuration. The experiments also showed that narcein acts by hypodermic injection as a sedative and anæsthetic, but not so certainly or in the same degree as morphia or atropia. Dr. Oettinger has also had the opportunity of observing the therapeutical effects of narcein in six cases. They were cases of neuralgic pain in the hip, angina pectoris dependent on arterial ossification and emphysema of the lungs, cancer of the pylorus, persistent cough from broken rib, emphysema of the lungs with hypertrophy of the heart, and bronchial catarrh. In the first case the narcein was injected beneath the skin, and it produced severe burning pain in the spot where the injection was applied; but it allayed the neuralgic pain. In the other cases the narcein was given internally, and the results were sometimes, but not invariably, favorable. Dr. Oettinger has arrived at the conclusion, from the result of his observations, that narcein acts almost as a pure hypnotic, without causing any previous excitement. The phenomena it especially induces

are, muscular weakness, sleepiness, and, in a slight degree, obtuseness of sensation: and also, in small doses insufficient to cause narcotism, it causes retardation of the pulse. As to its internal use, Dr. Oettinger thinks that narcein, which in his experience is at least four times weaker than morphia, ought to be specially recommended in those cases where it is desirable only to cause sleep, and not to allay pain. In cases where opium and morphia, on account of their action on the stomach, and on account of the stimulant properties of the former and the narcotic powers of the latter, are unsuitable, or the hypnotic property of morphia is exhausted, then late in the evening half a grain of narcein may be ordered, either in powder or solution; and next evening, if the hypnotic action has been too weak, and no irritation of the stomach has been manifested, a grain may be given. In fractional doses, as the eighth to the fourth of a grain, it may be used as a sedative in violent cough. As to its hypodermic use, Dr. Oettinger thinks it is unsuitable, because there is no combination of it which is readily soluble in warm water, and thus easy of introduction into the system by *one* injection; and the solutions at present used cause great pain and irritation.—*Schmidt's Jahrbücher.—British and Foreign Medico-Chirurgical Review, April* 1867, *p.* 527.

98.—ON THE ANTISEPTIC PROPERTIES OF THE HYPOSULPHITES.

Dr. Constantin Paul, who has previously written upon the physiological and therapeutical properties of the sulphites and hyposulphites, contributes to the *Bulletin de Thérapeutique* two facts relative to the disinfectant properties of the hyposulphites.

First fact:—A patient suffering from severe dysentery arrived in Paris in October 1865, during the prevalence of cholera. He inhabited a healthy locality, in which there had been no cholera. Some days after his arrival, the chambermaid took cholera and died in twelve days; after her several other servants were seized with cholera, but none died. Believing that this outbreak was due to the extremely offensive evacuations of his dysenteric patient, Dr. Paul employed a solution of hyposulphite of soda as a disinfectant. To the great comfort of those in attendance, the fetid odour from that moment disappeared. Not content with this amelioration, however, Dr. Paul sought to disinfect the offending matter before it left the intestine, for which purpose he employed the solution in the form of enemata. The effect of this was not only to destroy the odour of the evacuations, but also to give considerable relief to the patient, the intestine becoming less painful and defæcation less irksome.

Second fact:—Dr. Paul considering that the lochiæ may be a fruitful cause of puerperal diseases, resolved to try the disinfectant action of hyposulphite of soda as a preventive of these distressing obstetric sequelæ. For this purpose, he sprinkled the napkins to be applied to the parts with solution of the hyposulphite, and found that by that means the disagreeable odour which attends the accouchement-chamber was completely dispelled; and he believes that not only a disagreeable but a dangerous condition of the atmosphere of the apartment may thus be obviated. Dr. Paul states, that far from causing irritation of the parts the solution has rather anæsthetic properties, and, moreover, that wounds previously dressed with it become much less sensitive and less painful when touched.—*Edinburgh Medical Journal, Jan.* 1867, *p.* 666.

99.—TINCTURE OF PODOPHYLLIN.

By Fred. W. Dunne, Sen., Esq., Dulwich-road.

[The following is a good formula.]

Podophyllum, one grain; spirits of wine, two drachms. Dissolve, and add tincture of hyoscyamus, two drachms. Dose: one drachm of the tincture, containing a quarter of a grain of podophyllin, half a drachm of hyoscyamus. This preparation we found sufficiently active, in addition to a black draught when a stronger aperient is required.—*Lancet, March* 2, 1867, *p.* 291.

100.—SYRUP OF THE PHOSPHATES OF IRON, QUININE, AND STRYCHNIA.

(From Dr. Lyons' Clinique, at the Richmond, Whitworth, and Hardwicke Hospitals, Dublin.

This very excellent therapeutic agent continues to be a favourite remedy in the hands of Dr. Lyons, who reports the most important results of its use on a large scale in private practice. It is applicable to the treatment of a large variety of affections in the child and the adult, the male and the female. It promotes appetite, facilitates digestion, improves the tone of the nervous, vascular, and muscular systems, and may hence be employed with good effect in the debilitated strumous habit in the child, the anæmic and chlorotic states in the female, the low conditions of debilitated frame and broken-down constitution in the adult male, and as an invigorator of cardiac action in those of leuco-phlegmatic temperament, and in cases in which fatty change has commenced to manifest itself in the heart's muscle, after the meridian of life. Dr. Lyons states that he

knows of no combination comparable to it. As prepared by his directions, it contains per drachm one grain each of the phosphate of iron and quinine, and one thirty-second of a grain of the phosphate of strychnia. It may be given in drachm doses to the child of five years old, twice or thrice daily, and commencing with this dose for the adult it may be gradually increased to twice or thrice the quantity named.—*Medical Press and Circular, Dec.* 19, 1866, *p.* 619.

101.—CHLORATE OF QUINIA.

From Dr. Lyons' Clinique.

Further experience of this valuable agent (the introduction of which is due to Dr. Lyons, it will be remembered, and which was first made known to the profession in our pages) has confirmed the views entertained by its inventor. In all the graver forms of typhus, typhoid, scarlatina, small-pox, low phlegmonous inflammations, &c., &c., it has been employed with results of a highly satisfactory character, both in hospital and private cases. It appears to exercise a marked influence in controlling the circulation, sustaining its force, while its rate is diminished. In a case of low typhus with extremely feeble heart and a pulse at 144, the exhibition of a ten-grain dose brought the pulse down from twelve to fifteen beats within an hour after its administration. A case of severe small-pox was treated with it from the outset, in which the pulse never ran above ninety. It is usually administered by Dr. Lyons in a dose of from three to five grains, dissolved by the aid of a like number of drops of perchloric acid.—*Medical Press and Circular, Dec.* 19, 1866, *p.* 618.

102.—ON PARAFFO-STEARINE: A SUBSTITUTE FOR STARCH, PLASTER OF PARIS, AND SUCH LIKE SUBSTANCES, IN BANDAGES AND SPLINTS.

By James Startin, Esq., Senior Surgeon to the Hospital for Diseases of the Skin, &c.

For a few months past I have been using what appears to me to be an inexpensive, useful, cleanly, elegant, and efficient desideratum, in the treatment of varicose veins and diseased joints, instead of strapping, and also in all maladies or injuries where rest, equable support, and solidity of the parts affected, are required. This consists in immersing "Domett flannel," "Welsh flannel gauze," the woven elastic or other bandage, or felt, either the common carpet felt or that prepared for surgical purposes, in a combination of equal parts of rock paraffine and

stearine, as used for candles, which may be coloured to a flesh-tint with alkanet root, and liquified to a little beyond the melting-point (160° Fahr.), so as to render the composition of a temperature that may be readily manipulated without injury to the hand, or part on which it is applied. Rollers or felt, the latter cut into the shape of the splint required, are to be saturated with the above melted composition, and applied whilst warm and flexible to the limb or joint; when, if needed, further strength and solidity may be given by varnishing a portion of the melted composition over the splint or bandage with a painter's brush, and afterwards smoothing the whole with the palm of the hand, until it assumes the surface of ivory, or the well known appearance of a paraffine or stearine candle. A fold of linen, dipped in cold water, is finally to be passed round the bandage or splint, which immediately solidifies the melted paraffo-stearine, when the application is complete; and the wet linen may be continued as an evaporating lotion, if desired. Into this bandage or splint, openings may be readily cut by means of scissors curved on their cutting edge into the segment of a circle, or bent to an obtuse angle; the melted composition being afterwards applied over the cut edges of the opening, so as to form a complete solid case, allowing the escape, through such openings, of discharges, and the application of dressings. It will be perceived that, by dividing the paraffo-stearine bandage, and removing, say half an inch, or separating it into halves, and trimming the edges in the usual manner, splints will be formed having the exact configuration of the part to which they are to be applied, and that these splints can be lined with flannel, wash leather, &c., and strengthened with the melted paraffo-stearine to any extent required.

Mr. Ewen, Jermyn-street, the well-known plaster and bandage manufacturer, has undertaken to prepare and furnish these appliances, accompanied by directions for their employment.* Each bandage will be found soaked in paraffo-stearine, with a portion of the prepared composition in its containing canister, for varnishing the bandage or splint, if needed, *after it has been tightly and evenly rolled, or applied to the affected part.* The felt is supplied in sheets of convenient size, saturated with the composition, from which the splints can be cut, and after they have been moulded to the part requiring them as described.

All that is needed before employing these appliances, as prepared ready for use, is to put the canister containing the bandage and a portion of the paraffo-stearine for varnishing into boiling water until liquified; and the piece of prepared felt may be held before a fire or immersed in water a little below the boiling

* They will also be prepared by Messrs. Savory and Moore, of New Bond-street.

point, until it acquires the requisite flexibility, when it can be fixed where required by the ordinary procedure, varnished and finished by the aid of the canister of paraffo-stearine and brush sold with it, and finally solidified by surrounding it with linen dipped in cold water. Or, the whole of the appliances described can be readily extemporised by the aid of a pound or two of paraffine or stearine candles, a jug or jar in a saucepan of boiling water for melting the same, a rolled flannel, Domett, or other bandage, and a shaving-brush; or, should a splint and not a bandage be preferred, a strip of felt carpet, cut into the required shape, and also rolled together, so as to be immersed in the melted candle composition in the jar.

I have found that the best mode of procuring the stearine, or rock paraffin, when a moderate quantity only is required, is to purchase the candles (so-called) from any respectable tradesman or the candle-companies, asking for the stearine candles used for India, the melting point of which is about 157° Fahr. (the cost is one shilling a pound); or the rock paraffine, which melt at 135°, and cost the same price, at Messrs. Neighbour and Sons, Regent Street. I have observed that a mixture of the two sorts of candles is the most suitable; but either one of them can, of course, be used separately. If this be done, however, the paraffine should be employed in winter and the stearine in summer; and I may observe that all the bandages and splints may, by re-melting, be used a second or third time, thus rendering them amongst the most economical of applications; and it may also be well to mention that, when the removal of a bandage is required, it may be at once softened and taken off by brushing it over with any of the benzines used for cleaning gloves; that of Farey of Regent-street being the most suitable.* Each variety of benzine mentioned, according to my experience of several years, will be found a most useful surgical accessory, not only to clean the skin and hair from all their natural or acquired oily or sebaceous secretions, but also to remove grease, plasters, &c., from the cutaneous surface without causing local irritation; and, for these purposes, I have much pleasure in introducing it as a therapeutic agent to the profession, which has the property (as I often say to my patients) of cleansing a living skin as effectually as a dead one; and for such purposes, I doubt not, it will come into general requisition, perhaps even as extensively as glycerine, which I introduced twenty-four years ago, and which I have lived to find the subject of memoirs and special treatises advocating its employment for the purposes for which I originally recommended it, without even the mention of my name.—*British Medical Journal, March* 30, 1867, *p.* 348.

* Purified Benzine can also be obtained of Messrs. Taylor of Vere-street, Savory and Moore of New Bond-street, Waugh of Regent-street, &c.

103.—LIQUOR CARBONIS DETERGENS, AND SAPO EJUSDEM.

We have often taken occasion to speak of the benefit derived from antiseptic preparations in the treatment of various derangements of skin and mucous membrane. They are remedies sanctioned by ancient experience, but which modern science enables us to understand the *modus operandi* of, whilst it furnishes them also in more abundant, simple, and convenient forms. We have more than once called attention to the value of such remedies in that very annoying condition, *pruritus vulvæ*, caused, as it usually is, and especially during pregnancy, by unhealthy secretions from the cervix uteri; also in *chronic eczema;* and there are few maladies not dangerous to life which cause more suffering than these two. We are glad, therefore, to have a new form of antiseptic for local use, in the *liquor carbonis detergens*, an alcoholic solution of coal tar, containing, we presume, the carbolic, phenic, and other acids, with dark tarry matter, and differing from carbolic acid as the liquor cinchonæ does from quinine. It readily mixes with water, forming a permanent emulsion, and in various strengths is available as a mouth wash, a gargle, an injection for fetid uterine discharges, cancer, retained placenta, &c., gonorrhœa im the female, foul ulcers, sloughing sores, and all maladies depending on, or complicated by parasitic beings: lice, fungi, &c., &c. It is also used in the sick room as a disinfectant, and is combined with soap. The latter may be highly useful for medical men who dress offensive wounds, or perform *post-mortem* examinations, as well as for toilet use by persons whose smell, like that of Gorgonius in Horace's satires, is a little too much like that of the goat. Anonymous letters often reach our office, praying from a remedy for foul breath or perspiration. Here is one.—*Medical Times and Gazette, Jan.* 19, 1867, *p.* 76.

104.—NOTICE OF SOME OF THE THERAPEUTIC EFFECTS OF THE BROMIDE OF POTASSIUM.

By Dr. James Begbie, Fellow of the Royal College of Physicians of Edinburgh.

[In the following paper Dr. Begbie limits his remarks to the therapeutic effects of the bromide of potassium in some disorders of the nervous system.]

The bromide of potassium is a valuable calmative and hypnotic. When opium and other narcotics have failed to procure sleep, or when they have succeeded only at the expense of sickness, vomiting, headache, and other consequences, the bromide, free from all unpleasant or injurious effects, will often tranquillize and secure repose. In the sleeplessness which occurs

during convalescence from fever, and at the termination of acute diseases, or after the performance of surgical operations, the bromide will be found a safe and efficacious remedy. A dose of from twenty to thirty grains dissolved in a wineglassful of water, or of orange-flower water, administered at bed-time, repeated in the morning, and persistently employed in this way for days, or weeks, will often effect what the most powerful narcotics in daily use have failed to accomplish. A medical man recently called on to undergo a painful operation, by which the whole front of the tibia was laid bare, in connexion with the use of the trephine, and the examination of the shaft of the bone, suffered greatly from restless, sleepless nights. He had had recourse to opiates in the usual form, but without any alleviation. I suggested to him the use of the bromide of potassium in doses of thirty grains, night and morning, which he immediately commenced, and followed with perfect success. He writes me now, —"I derived great benefit from the use of the bromide of potassium. Its effect in procuring sleep was very marked, while it produced none of the unpleasant after-symptoms following the use of opium. In all cases of irritability of the nervous system it will be found, I should think, to have a high therapeutic value."

In those distressing nervous affections, the offspring of overtaxed brain, which we are ever and anon called upon to combat in the case of the earnest student, the plodding man of business, or the speculating merchant, cases where, by rising early, and sitting up late, neglecting regular hours of diet, and abandoning exercise in the open air, the whole machinery of life and health have been deranged, and the unhappy victims contemplate nothing short of the wreck of mind and body: in these circumstances, next to rigid hygienic rules imposed by the physician, and carefully carried out by the patient, will be found the amelioration and ultimate removal of the evil, in the use of remedies which have a calmative effect upon the nervous system. Of these the bromides, in my experience, are the safest and the best. An intelligent and hard-working head of a great monetary establishment, who had been obliged from loss of health to resign his position, writes me as follows:—"I write to tell you of the wonderful benefit which even in the course of the first month I had derived from taking the bromide of potassium. I am sure you will be glad to know that I have not for years been so free of all those painful and disagreeable symptoms which used to affect me,—the constant nervous headache, want of sleep, and breathlessness, both during the day and night. Notwithstanding that in travelling I was unable to take the medicine as regularly as I should have done had I been at home, it has worked upon me like a charm." Associated with the

cerebral disorder of giddiness and sleeplessness, we often find perversion of the external senses, such as rushing, ringing sounds in the ears, &c. These I have found to be quelled and silenced by the use of the bromide, which may be successfully administered in all cases of hyperæsthesia.

[Of the powerful influence for good which the bromides have exercised over epileptiform disorders there can be no doubt. The remedy requires a prolonged use. The system acquires a great tolerance of its employment, and no evil has been observed to result from its long continuance.]

Opium, antimony, aconite, digitalis, and others have all been employed in large and frequently repeated does, as powerful depressants in the paroxysms of acute mania and delirium tremens. The practice is not without its risks. In securing the calmative and sedative effects of the bromides will be found a safer and, I venture to hope, a not less successful mode of practice. I have seen, in two recent cases of violent maniacal excitement, a dose of thirty grains of the bromide of potassium, administered every second hour, reduce to quietness the restless subjects, and lay them down in sleep, of which they had for days been deprived. I have not much experience of the remedy in delirium tremens, but I know that it is now on its trial, and I entertain little doubt that it will be successful. In one case its use has been followed by satisfactory results, quickly calming the agitation and excitement, and inducing sleep. In nymphomania, the bromides have been employed with marked success, and Dr. James Struthers informs me that he has obtained most satisfactory results from their administration in puerperal mania. This experience is confirmed by that of other physicians engaged in obstetric practice. In melancholia, attended with fixed delusions and great restlessness, I have found the bromide a powerful calmative. A young woman about thirty years of age, who had been afflicted on a former occasion with deep depression and painful delusions, was lately suffering from a renewal of her malady, in which persistent sleeplessness and dread of impending destruction of all near to her were the the prominent features, was quieted, composed, and put to sleep under the use of repeated doses of the bromide, and in the course of a few days regained her reason and self-control.

There are several affections of the larynx and bronchi which we have reason to believe have a cerebral origin, or, at least, an intimate connexion with the nervous centres, and through which their treatment may be conducted. Of these, hooping-cough, laryngismus stridulus, spasmodic croup, and spasmodic asthma are examples. The anæsthetic properties of the bromide of ammoniun, as manifested on the mucous membrane of the

mouth and throat, had led it to be employed in the treatment of the first-named affection, and with a large share of success,—a success depending, however, I apprehend, on its more general effects on the nervous system, just as we see the beneficial effects of hydrocyanic acid and henbane in the early stages, and indeed throughout the continuance of the paroxysms, of the disease. No treatment of hooping-cough is apparently successful which is not directed to, and capable of soothing, the nervous element which forms so conspicuous a part in its phenomena. For this purpose I have found the bromide of potassium to possess powers not inferior to any of the narcotic remedies in daily use.

I can only form a conjecture in regard to the therapeutic value of the bromides in laryngismus stridulus and spasmodic croup. I have had no opportunity as yet of testing their operation in these affections, though I have a confident hope that they will be found useful in these and other spasmodic disorders of the excito-motory system of nerves. In spasmodic asthma which bears a close analogy to them in its manifestations, and an intimate relation to them as a disease of nervous origin, I have obtained the most gratifying results from the employment of the bromides. In two cases of long standing, which had resisted all approved methods of treatment, and where the patient had renounced all hope of benefit from drugs, the use of the bromide of potassium in full doses, night and morning, was followed by a remarkable remission of the fit,—the patient in one case having slept for several consecutive nights without the return of the asthmatic paroxysm, a circumstance which had not occurred for years. In the second case the result was equally satisfactory.

When Professor Claude Bernard demonstrated that the increased formation of sugar by the liver, and its presence in the blood is the result of some exciting cause which acts by reflex action, conveying the stimulus to the medulla oblongata, whence it is propagated by the spinal cord and great sympathetic nerve to the liver; and when he also showed that in cutting the pneumogastric nerve the secretion of sugar was stopped, but that it still took place when the floor of the fourth ventricle was irritated after the division of the nerve; and when these experiments were followed by results obtained by Dr. Harley and others, showing that local irritation of the liver itself can produce saccharine urine; when we consider also that a saccharine condition of the urine frequently follows injuries of the brain, and that disease of that organ is sometimes the immediate cause of death in those labouring under diabetes, we found a new view of the pathology of that disease opened up to us. When we bear in mind, also, the alterative and absorbent effects of the

bromides on the liver, and their remarkable power in soothing and calming irritability of the nervous system, we might be encouraged to employ such an agent in the treatment of diabetes. The physiological fact, the pathological condition, and the therapeutic principle, make it fairly applicable, and lead us to expect satisfactory results.

Towards the close of January last, a gentleman, aged 60, residing in the north of England, consulted me regarding the well-marked symptoms of diabetes under which he had long laboured. He had been for three months under the care of Mr. Welford of Sunderland, and by his advice came to Edinburgh. He had been treated by the remedies considered of most avail, and by the diet considered essential in the management of his malady; but he had lost ground. He had long been dyspeptic. He was now thin, pallid, and emaciated. His skin was cold and dry; his pulse rapid and feeble; his tongue red and tender; his gums spongy and apt to bleed; his thirst was excessive; his appetite voracious; his bowels were constipated, and he suffered from bleeding piles; his urine was pale, and voided frequently and in large quantity. It was of high density, and loaded with sugar. The region of the liver was tumid and somewhat tender. The diet of animal food he had hitherto been permitted was continued in restricted quantity, and the free use of succulent vegetables was allowed, together with a liberal use of claret. All medicine hitherto in use was suspended, and the bromide of potassium, in doses of 20 grains, was prescribed, and ordered to be taken three times a-day. The treatment was steadily pursued. From week to week a marked improvement was perceptible. The skin gradually became moist and warmer, the tongue and gums less raw and tender. The appetite and thirst abated; the calls to pass urine were less frequent and urgent, and the quantity voided sensibly decreased; the density of the secretion fell, and the sugar by degrees became less and less, till, on the third week of March, six weeks after commencing the treatment by the bromide, not a trace of it remained, and Mr. H. returned home apparently and confessedly quite well. Desirous, however, of ascertaining whether he continued so, I wrote to Mr. Welford at the close of May, and received from him the following:—"From the time of Mr. H.'s return home up to the 24th of March he continued quite well. Whether he caught cold, or committed some indiscretion in diet, I don't know; but I was called to see him on that day, and found him suffering from pain and tenderness over the liver, thirst, dry tongue, increased secretion of urine, sp. gr. 1·032, with a slight trace of sugar. I prescribed medicine to act gently on the liver and bowels, still continuing the bromide; and, am happy to say, left him quiet well on the 14th of

May, not the slightest trace of sugar remaining, or any other bad symptom. I believe he still continues the bromide every morning; I requested him to do so as you wished. Should anything occur I shall let you know." Mr. W. adds, "I have had under my care a lady suffering from diabetes, and, am happy to say, after a short time she has improved most wonderfully by taking the bromide and nothing else."

Shortly after this experience, I was consulted, in conjunction with Sir James Simpson and Dr. Ross of Dingwall, in the case of a lady from the north of Scotland, who had for three years been labouring under diabetes. The disorder was well marked in all its prominent features, and the health had seriously declined. I mentioned, in consultation, the result of the two cases just recorded, and we agreed to recommend the bromide, and prescribed it accordingly. After some weeks had passed I heard from this lady that her health had much improved, and that her more distressing symptoms were greatly moderated. The medicine, however, had, she thought, made her nervous and emotional, and it had been discontinued. The urine is still saccharine. Sir James Simpson, in afterwards referring to this case, mentioned to me another in which the remedy had entirely succeeded. The history, I hope, he will give to the profession.

A young gentleman under the care of the late Mr. Alexander, and subsequently under that of Dr. Smart, by whom I had been consulted, had long laboured under diabetes, and had, under different remedies, appeared for a time to improve, derived no benefit from the use of bromide after a short trial, and resorted to the south of France, where, under a genial sky and the use of the dietary prescribed by Dr. Pavy, he greatly improved. On his return, however, his urine was found still loaded with sugar, which a subsequent use of the bromide for a short time has not been effectual in reducing.

A young gentleman, aged 13, under the care of Dr. Burn, labouring under diabetes, of nine months' duration, in the course of which many remedies and careful dietetic rules had been followed without affording relief, commenced the use of the bromide of potassium in the beginning of September last. At that time he was pale and emaciated, with cold dry skin, and rapid and feeble pulse. His appetite was morbid and capricious; he was particularly addicted to the consumption of confections in no limited degree; his thirst was excessive. He passed, night and day, an inordinate quantity of urine, of high specific gravity, containing a large amount of sugar. He complained much of occipital headache, and any attempt to laugh was followed by a peculiar crowing inspiration twice repeated. Dr. Burn has informed me from time to time of his progress, which

has been steadily towards improvement. In addition to the bromide, I should mention that cod-liver oil has been in use. Under these means, carefully pursued for seven weeks, and without attention to diet, the restrictions of which could not be carried out, the urine has fallen to a normal quantity; and no trace of sugar remains. The skin is moist and soft, and of natural temperature. The appetite for ordinary food is returning, and the thirst has entirely abated. The pain at the occiput still, however, continues, and the peculiar crowing inspiration, when the risible faculties are moved, marks a feature in the case, and indicates its nervous origin.

These cases sufficiently show that there are forms of diabetes in which the functional derangement of the liver, and the production of sugar, are arrested by an agent whose operation is that of a sedative to the nervous system. It would be premature at the present moment to speculate on the amount of success that may attend the exhibition of the remedy in the varying circumstances in which the disease presents itself. This paper is a mere notice. A larger experience is required.

That a remedy, possessing apparently so little power as the bromide of potassium, should have been suggested in the treatment of cholera, a disease so grave in its character, so rapid in its course, and so fatal in its results, may appear to many inexplicable; nevertheless, the phenomena of cholera, in its earlier stages, point to its intimate connexion with disorder of the ganglionic system of nerves, with irritation of the nerve-centres and vaso-motor nerves, and with spasm of the capillary vessels, and obstructed circulation. To arrest this condition as early as possible seemed a clear indication of treatment; and the bromide of potassium, as possessing decided power in allaying irritation of the nervous system, and of relaxing spasm of the muscular fibre, was proposed by me as a possible means of allaying at least some of the more urgent symptoms of the disease. It was introduced into practice upon no empirical ground, and with no expectation that it was to be found a cure for the disease. The very first trials of it in the Leith Cholera Hospital were such as to justify the confident hope that it would be found useful; and its subsequent employment there, as well as in the Edinburgh Cholera Hospital, has not disappointed expectation. In the two institutions named, the former under the superintendence of Mr. Niven, the latter under that of Dr. Stevenson Smith, and also in private practice, I have had many opportunities of witnessing its effects, and am now prepared to say that the bromide of potassium, though not possessing the properties of an antidote to the poison of cholera, though not a specific to the shock of this terrible disease, has certainly stript it of some of its terrors.

No one, I believe, who has with unprejudiced mind given himself the opportunity of watching the effect of the remedy in the earlier stage of collapse, can have failed to observe the remarkable remission of vomiting and the arrest of cramp which follow the exhibition of five or six doses of twenty or thirty grains, at the interval of an hour or half-an-hour, and the speedy return of warmth and colour to the previously cold and livid surface. To these indications of reaction there follows the cessation of the rice-water dejections, and the secretion and voiding of urine. Here, it may be said, its efficacy terminates; and certainly there is no need of pushing its use further. It has done good service. It has removed the only pain the patient suffers—the agony of cramp. It has arrested the vomiting and diarrhœa. It has arrested the tendency to death; and now there opens to the observing physician a second stage in the aspects of this mysterious disorder, and an opportunity of suggesting remedies more suited to the new phenomena which succeed. Even so we relinquish our means of cure fitted for the cold stage of fever, and betake ourselves to remedies more befitting the hot and sweating periods which follow after. The use of the bromide is contraindicated so soon as reaction has set in. Its known physiological action precludes its use when drowsiness and stupor and other symptoms of oppressed brain begin to manifest themselves. I have not satisfied myself, however, that the use of the drug in the earlier stage tends to a fuller development of these in the latter, as some are inclined to believe.

Who doubts the efficacy of the antimonial opiate associated with the name of Dr. Graves, in the treatment of the nervous element in fever? Opium and antimony, however, cannot always be administered with advantage in such cases, and camphor and henbane and other sedatives often fail in securing relief. In the bromide of potassium we have an excellent substitute, one which can be administered with wine or other stimulant, and whose power to calm in such circumstances I have lately tested with satisfaction. Who distrusts the anti-periodic power of quina in ague, or what can we look to but arsenic if cinchona fails? A sufferer from quotidian ague, after large and repeated doses of quina during the interval, had his regular accession of cold, and hot, and sweating stages unaffected by the specific. The sweating stage was unusually protracted and exhausting, and at the end of a fortnight no mitigation was effected. He was advised to take a full dose of the bromide of potassium every three hours during the remission, and, with one imperfect paroxysm, he got quit of his malady.

When the long list of anti-neuralgic remedies, so called, has been exhausted, and when the hope of the physician has died

away with the fading prospects of the patient; when no palpable or suspected organic mischief gives rise to the want of success in the use of well-tried and approved remedies, and when no constitutional diathesis stands in the way of well-directed skill to overcome; in those anomalous forms of neuralgia let me ask a trial of the bromide of potassium. It will, now and then, in its own gentle way, reprove the employment of the more heroic treatment which had anticipated its use, and demonstrate that a calmative, in such cases, frequently succeeds better than a counter-irritant.—*Edinburgh Medical Journal*, *Dec.* 1866, *p.* 484.

105.—ON THE EFFECTS OF IODIDE OF POTASSIUM.

By Dr. R. S. Sisson, Maida Hill.

There are several ways of preventing the catarrhal symptoms caused by the exhibition of iodide of potassium. In susceptible persons the dose must be small, much diluted, and taken on an empty stomach. It may be combined with carbonate of potash, which prevents iodine being set free in the stomach. It may be administered in combination with ammonia, which acts on the skin, and so relieves the mucous membranes; or it may be combined with laudanum.—*Lancet*, *Dec.* 29, 1866, *p.* 742.

106.—TWO CASES OF POISONING BY OVER-DOSES OF THE FLUID EXTRACT OF GELSEMINUM.

Reported by Rezin P. Davis, Esq., of Parkersburg, W. Va.

On the evening of October 6th, 1866, I was called to visit Mr. C. H. B., a young lawyer of our city, who was reported as being very ill. I answered the call immediately, and found him in the following condition:—

He was lying upon his left side, face somewhat congested, pupils dilated, but responding to the different degrees of light; eyelids half closed, with apparent inability to move them; lower jaw drooping, and his tongue, to use his own expression, "was so thick he could hardly speak;" his skin was warm and moist; pulse small and feeble, and his respirations somewhat diminished in number. He had neither purging nor vomiting.

Upon my questioning him as regards his condition, he told me that "he and a friend had been enjoying themselves in a social way for some three or four days," and that nothing was the matter with him now "but extreme nervous prostration." He also told me that he had not taken medicine of any kind. Thinking, as he did himself, that he was merely prostrated from excessive dissipation (he being of a very nervous and delicate

constitution). I ordered him a brandy punch, and went to the drug store for some medicine.

Whilst waiting for the prescription to be filled, his friend Mr. S. came staggering into the store, saying, "I am blind; I cannot see. What in the world is this I have taken? (at the same time showing a bottle.) My friend B. is down town in the same fix." I examined the bottle, and found it plainly labelled "Fluid Ex. Gelseminum." I asked him how much they had taken? He replied, "B. and I have each taken a tablespoonful." I immediately sent my student, Mr. White, to see Mr. B. and give him an emetic, with other remedies to be given after he had vomited. I then gave Mr. S. an emetic, which acted freely; after which I gave him Quin. sulph. ℥j., in spt. vin. gal. ℥iv. In a few minutes Mr. White returned, and said Mr. B. was dying; and that it was with great difficulty that he got him to swallow the emetic, which had not acted. Dr. A. G. Clark accompanying me, we hastened to where Mr. B. was, and found him in a dying condition, pupils widely dilated, spasmodic breathing, surface cold and congested, pulse almost imperceptible, and totally unconscious. Mustard was applied to the extremities, his body sponged with hot brandy, and artificial respiration; but all to no effect. He died at 8.30 p.m., about two hours and a half after he had taken the poison.

I returned to Mr. S.; found him still inclined to sleep, with deep inspiration, and a numbness of the whole body. I repeated the quina and brandy, but in only one-half the quantity given before, and kept him walking about, with the aid of two of his friends. At ten o'clock he was feeling quite comfortable. Considering him out of danger, I sent him to bed, when he slept soundly all night, waking in the morning feeling, as he said, "quite well, but weak and dizzy." He recovered without any further difficulty.

The fluid extract taken by the above parties was prepared by Tilden and Co., New Lebanon, N. Y. There being no antidote to poisonous doses of gelseminum given in the U. S. D., I was at a loss to know how to act and what to do. But acting upon general principles, I first vomited Mr. S. freely, and then gave him the large doses of quina spoken of above. My reasons for giving the quina were these: gelseminum being a powerful nervous sedative, when taken in large quantities, acting upon the brain and nervous system generally, and quina being a cerebral stimulant, I thought that large doses of quina might rouse the nervous centres to action; through this to restore tone and vigour to the heart, and equalize the circulation. I am satisfied that the quina had a good effect, for Mr. S. had taken the gelseminum nearly ten hours before he took the

emetic, giving the system time to come thoroughly under its influence. I am satisfied that had Mr. S. waited, and sent for a physician, that he would have shared the same fate as his friend and companion; that the time lost in so doing would have placed him beyond the reach of medical assistance.—*American Journal of Medical Sciences, Jan.*, 1867, *p.* 271.

107.—FATTY DEGENERATION OF MUSCLE.

By C. Macnamara, Esq., Surgeon to the Calcutta Ophthalmic Hospital.

It seems probable that, in proportion as advances are made by opticians in the perfection of the higher powers of the microscope, it will be necessary for us to reconsider some of our ideas regarding various points of pathology, and in connexion with this subject I purpose making some remarks on fatty degeneration of muscle.

I shall confine my observations to a specimen sent me by Dr. Francis, being a portion of the walls of the heart of a patient who died rather suddenly in the Medical College Hospital from fever. On making a *post mortem* examination, the heart was found to be in an advanced state of fatty degeneration, portions of it looking more like tough yellow adipose tissue than muscular fibre.

I divided this specimen into two parts. The first (A) was put by to soak in Price's glycerine for a month, and the second (B) was submitted to the action of an alkaline solution of carmine. The power employed in examining these specimens was a Powell and Lealand's fiftieth of an inch glass.

The first point which struck me on looking at the portion marked (A) was the disintegrated appearance of the muscular fibre. It seemed as if it had been minced up into small particles on the glass slide, or as if the pressure of the covering glass had pulverised it, having evidently lost its toughness and elasticity.

A considerable quantity of fatty matter was observed adhering to, or replacing the sarcolemma, and concealing to a great extent the transverse bands of contractile tissue within it, the specimen seeming at first sight to consist of an amorphous mass of fatty matter. On making a more careful examination, however, a large proportion of the characteristic elements of striped muscle could be seen within the fatty sarcolemma; and even in a preparation such as that under consideration, representing an extreme case of fatty degeneration, I believe I am within the mark when I assert that one-half of its contractile bands were in working order, although the whole of the sarcolemma was altered in character. The apparent brittleness of the muscle

above noticed extended to the ultimate fibres, so that longitudinal pieces of them were in places chipped or broken off, and the extremities of the separate transverse bands could be clearly seen. In other places one or more of the transverse bands protruded from the end of a broken ultimate fibre, like a coil or shred of tissue, and if altered by fatty changes it reminded me of a small piece of worm-eaten wood. Consequently, although the contractile bands appear, after long soaking in glycerine, to consist of a homogeneous substance, they are, nevertheless, capable of undergoing fatty degeneration similar to that of the sarcolemma, and yet of retaining their form. These pathological conditions tended to confirm me in the ideas I had gained regarding the minute anatomy of muscle when studying that subject. I may remark that precisely similar abnormal appearances are to be found in the fibres of the lens in certain forms of cataract. It by no means follows, because in a specimen of this kind we find much of the contractile tissue in a comparatively normal condition, that other parts of it are not completely destroyed; on the contrary, a considerable part of it was disintegrated, forming an amorphous fatty mass, but retaining the general outline of the ultimate fibre.

We may readily conceive, however, that the contractile tissue remaining intact was sufficient to fulfil, although very imperfectly, the work for which it was required; and we may further understand, from the pathological changes above described, the reason why, in a case of this kind, the heart's action is so remarkably weak, nearly one-half of its working material having been destroyed or rendered almost useless. This fact also accounts for the feebleness of the heart's sounds in a case of fatty degeneration; the intensity of the sounds evidently depends somewhat upon the degree of its muscular development, and, consequently, if nearly half of the muscle is destroyed, the sounds must be reduced in an equal proportion,—assuming that the sound heard over every muscle in the act of contracting or dilating is caused by the friction and coiling of its bands of contractile tissue.

Doubtless the sounds of the heart are for the most part due to other agencies, which would also be influenced by the weakened state of the fatty muscle, but still one-half of the sound, whatever its intensity in health, which is produced by the friction of the bands of contractile tissue against one another, must be wanting in a case of excessive fatty degeneration. I will venture a step further, and assume that a portion of the heat of the body arises from the action of these contractile transverse bands. It is almost impossible to form an idea of their number, but the space covered by them must be prodigious, and considering the constant movements to which the muscles are sub-

jected, and, therefore, the amount of friction thus brought into play, we may well conceive that a part of the heat of the body is engendered from this source; for not only have we to consider the amount produced by friction, but also by the forces necessary to maintain the tension and relaxation of the contractile bands, which are as capable of generating heat as combustion. It appears doubtful if muscular force ever ceases unless, as a result of disease (paralysis and the like); certainly the heart's action continues as long as life lasts, so that the apparent inaction of the muscles during sleep is no valid objection against that of its heat-producing powers. If this be the case, it is not improbable that electricity is developed from the same source; and it is the fact that indications exist of the presence of an electric current in a muscle during sleep which made me state it was likely a certain amount of force was exerted by its contractile bands, although apparently at rest. I am well aware that the chemical changes going on in the body may produce the phenomenon of heat and electricity referred to, but when we have evidence of the existence of a source of these forces as palpable as that presented to us by the minute anatomy of muscle, we should certainly allow it its due weight when considering these matters. If, therefore, my premises are true, a less amount of sound, heat, and electricity should be evolved from a muscle in a state of fatty degeneration than in a healthy muscle, because in the former a vast quantity of the friction, tension, and relaxation of the tissue which occur in the latter must be destroyed.

The second portion of the specimen under consideration (B) was examined more particularly with regard to its germinal matter. From this and other examples of the same kind, I would lay it down as a general rule that so long as the germinal matter remains intact the longitudinal and transverse bands of contractile tissue will be found in working order. In certain forms of disease—as, for instance, in paralysis—they become atrophied; but if the germinal matter remains healthy, no sooner is it thrown into action by a restoration of the communication with the nervous centre than it at once takes on an increased action, and the wasted muscle is brought into use and resumes its former bulk. It is doubtless an assumption to a certain extent to talk of the pathological changes, noticed in a specimen of this kind, depending on faulty action in the germinal matter, and not on chemical changes; in fact, both these forces appear to bear a share in the process. It is evident, however, that so long as the germinal matter presents its normal appearance, the contractile tissue retains its usual form and functions; as the germinal matter becomes broken up and destroyed, the contractile tissue entirely disappears, and an

amorphous fatty substance takes its place, no new formed material (contractile tissue) being produced, and the old structure having undergone disintegration and decay.

I am hardly, as I before remarked, in a position to assert that the diseased action commenced in the germinal matter, because it may reasonably be asked, why resort to such a theory and not take it for granted that these fatty changes begin in the sarcolemma, and gradually involve the germinal matter and all the other structures of which the muscle is constructed? From analogy, however, I judge that the disease in this instance is attributable to a fault in the formative process, because, as Dr. Beale has long since demonstrated, the opposite condition to fatty degeneration exists in the germinal matter of parts marked by excessive growth—as, for example, in scirrhus. The amount of germinal matter to be seen in a specimen of scirrhus is very remarkable; the tissue, when coloured with carmine, appears in a perfect blaze, giving one the idea of intense action going on in the part. In abnormal specimens of less active growth, the germinal matter, though in excess, is far from assuming the proportions it does in scirrhus; or, in other words, excess of germinal matter is tantamount to rapidity of growth. If this be an axiom in pathology, then the converse probably holds good, and the decrease of germinal matter noticed in the specimen under examination is consistent with the absence of formed material, and in its place the product of the changed contractile tissue. The blood is doubtless necessary to the life of the tissues, but whether it is capable of maintaining the structures of the body in a normal condition without the intervention of the germinal matter is more than doubtful. Like a river, the blood supplies necessary moisture to the part through which it flows, and in turn receives back its watery particles laden with the used-up material of the soil, to be reconverted into useful substance or otherwise employed. The blood, however, may be perfectly healthy, but as the vital force (the peculiar property of germinal matter) lessens—as, for instance, in old age– fatty changes occur in the tissues. On the other hand, if the circulating fluid is wanting in certain elements demanded by the germinal matter for the production of formed material, fatty degeneration also follows. In this way we can account for the reparative changes sometimes noticed in tissues that have undergone fatty degeneration; for so long as the abnormal state of the blood continues, upon which the disease depends, the contractile tissue of muscle, for instance, degenerates and cannot be reformed, but immediately the blood improves in quality, the germinal matter is again able to perform its function, and formed material is produced, the diseased structures being replaced by healthy ones.—*Med. Times and Gazette, April* 20, 1867, *p.* 412.

108.—HYDROSTATIC ATOMISER OR EXSUFFLATOR.

By Dr. G. J. Arnold, Roxbury, U.S.

Since fluids were first atomised for local anæsthesia, various more or less perfect methods have been adopted for the purpose. The more common apparatus consists of India-rubber bulbs, so arranged that while one acts as a bellows the other is designed by its elasticity to keep up a constant and equable pressure. Although excellent in theory, practically it frequently disappoints; for besides other defects, it requires an assistant, and it is almost impossible for one person to keep up an uniform current for more than one or two moments, on account of the extreme fatigue to the muscles of the hand in working it. Steam has been used, but of course is not always available, and has its obvious disadvantages. The hand air or force pump has been employed, but this also necessitates an assistant, even for the slightest operation. To obviate these and other defects, hydrostatic pressure has been resorted to, and apparently with most satisfactory results.

The apparatus consists of two closed cylindrical vessels (Nos. 1 and 2), each capable of holding one or more gallons of water. On the side of each, close to the bottom, is a short tube (*a* and *a′*), with an aperture not exceeding five eighths of an inch in diameter. At the top of each is a stop-cock (*c* and *c′*) of one eighth of an inch delivery. These apertures may be varied in size, according to the size of the vessels. The stop-cocks being closed, vessel No. 1 is filled with water. The two vessels are then connected by a flexible tube (*a* and *a′*), the larger aperture of the one with the larger aperture of the other. The atomizer (*b*) is connected by means of a small flexible tube with the stop-cock (*c′*) of the empty or air-vessel, No. 2. Elevate the vessel of water (No. 1) and open both cocks; the water will of course displace the air in vessel No. 2., and force it through the atomizer. Sufficient pressure is secured by an elevation of ten feet, and the height of an ordinary room answers very well. When the air has been entirely displaced in vessel No. 2, change the atomizer

tube from No. 2 to No. 1, reverse the position of the vessels, and the fountain will be renewed without the escape of a drop of water. The principle here involved is familiar to all.

In houses supplied with aqueduct water, the water-tube of the apparatus *(a—a′)* may be connected with a hydrant, and thus one of the vessels be dispensed with—the air vessel only being retained.

All the effects of rhigolene, or concentrated ether, are secured by this apparatus. With rhigolene, the thermometer has been reduced from 72° above to 10° below zero, Fahrenheit, in ten seconds.

The following are some of its advantages :—

1. By it a continuous, uniform, and equable current can be obtained at any time.

2. Two or more atomizers can be employed at the same time. This is important where it is desirable to operate on a large surface at once.

3. In an office, the whole apparatus can be constantly ready for use at the shortest notice.

4. The current can be graduated to a nicety with regard to force, and be continued as long as required.

5. It obviates the necessity of skilled assistants, without imposing upon the surgeon the distracting labour of manipulating the apparatus when his attention is required in the more important processes of an operation.—*Boston Medical and Surgical Journal, Dec.* 27, 1866, *p.* 434.

109.—ON POLYPUS OF THE NOSE, MORE PARTICULARLY IN REFERENCE TO ITS TREATMENT.

By Thomas Bryant, Esq., Assistant Surgeon to Guy's Hospital.

[The diagnosis of polypus of the nose is not quite so easy as some think. The cases are not rare which are brought under our notice as examples of polypi in which the symptoms present are without doubt due to the presence of a deformed nasal septum, or a thickened state of the mucous membrane covering the lower turbinated bone ; indeed, any disease causing symptoms of obstruction to a nasal passage is, as a rule, set down as being one of polypus.]

There has hitherto been but one kind of practice adopted for the treatment of these nasal polypi to which anything like success can be attributed, and that is, their forcible abruption by means of instruments. Some surgeons employ a large pair of well-made forceps, which are carefully applied to the peduncles of the growths ; whilst others prefer the "noose," or instrument by which a wire or cord is slipped over the body of the polypus, and its neck encircled. In both instances the

growth is forcibly torn away from its attachments, and relief afforded. As far as it goes this treatment is doubtless good, and may be employed whenever the polypus is of sufficient size to require interference; but all surgeons are aware of the unsatisfactory condition of patients who have been thus treated. It is true the chief portions of the disease for which the surgeon has been consulted may be removed, and a certain measure of relief afforded to the patients; but how long can this relief be promised? How soon will the same symptoms of the disease reappear, and a fresh operation be demanded, to be followed by the same relief, relapse, and surgical interference? We all know these cases may go on during the patient's life; that the period of immunity from the disease may vary in different patients, or even in the same patient at different periods; but we also know that, as a rule, a return will take place, and that sooner or later a repetition of surgical treatment will be called for.

It was this unsatisfactory state of matters which induced me to look about for a different plan of treatment, and having now employed it for some years with invariable success, I can with considerable confidence recommend it for general adoption. I am disposed to regard it as a practical wrinkle of no mean value in the treatment of a hitherto very intractable affection, and it is with some little pleasure that I now bring it publicly before my professional brethren. I propose to demonstrate the practice by the quotation of cases.

Case 1.—The first case in which I was led to adopt the practice, in the year 1862, was in a young woman, E. C., aged 32, who had been under my care at Guy's Hospital for several years. She had both nostrils affected with polypi, and for this she sought relief about every three months. Her nostrils were remarkably small, so that the operation for removal was one of difficulty. I had tried the injection of astringent lotions with no success, or with so little that it was not worth describing under that name, and gave them up. I then looked about for some powerful astringent that might be locally applied, and that would yet be innocuous to healthy mucous membrane, and found it in *tannin*. I ordered this to be used as *a snuff*, the patient to get some friend to blow it daily up the nostril through a quill. In one month this patient came to me well. Both nostrils were quite clear and free from all signs of disease. The patient was under my observation for three years afterwards, and no return of the affection made its appearance.

Case 2.—The second case I propose to quote occurred in the person of a gentleman, aged 52, who had polypoid growths in both nostrils for ten years. When he came under my care, in July, 1864, both nostrils were completely plugged. On the left side the nose was filled even to its external orifice; on the right

the growth occupied the posterior nares, and was not visible in front. I cleared the left nostril with tolerable ease by means of the instrument I generally employ—the "noose,"—taking away one of the largest polypi I ever removed. Some bleeding followed the operation, and as the polypus of the right side could not be brought forwards for manipulation, its removal was postponed for one week. I thought, however, it would be well to try the effects of the tannin in this case, and prescribed it as in the last. The following week, when I saw this gentleman again, he came into my consulting room with some spirit, saying that he was all right; that on the third day after the use of the snuff a polypus as large as the one I had removed from the left nostril had come away from the right, and that he was quite well. This gentleman was ordered to keep some of the snuff by him, and to use it on the slightest indications of obstruction to his nose. He has remained well ever since, and when I saw him early this year he was quite free from the disease.

Case 3.—Sarah S., aged 60, had been the subject of polypus in both nostrils for many years. She had been under my care for several years, and had been operated on five times, the last operation having been performed three months previously. When I saw her on the 19th of February, 1866, her nose was full of polypi, even to the external orifice. Although an extreme case of the disease, I deemed it right, as an experiment, to try the effect of the tannin, used as a snuff; and on March 12th (three weeks afterwards) the nose was quite clear. From the day of its use the growth began to wither and slough off. By the 26th of March, on a careful examination of the nostrils, no signs of the disease could be made out. The mucous membrane also appeared healthy. I saw this patient on the 28th of May, and she was still well.

Case 4.—Stephen B., aged 31, came to me on the 24th of March, 1866, with nasal polypi completely occluding the right nostril. He had had the disease six or seven years, and had been operated upon many times, the last being about a year ago. Tannin was ordered as a snuff, and on the fourth day (March 29th) the growth had much diminished: it was evidently withering. He had then a slight passage. On the 5th of April the polypus had disappeared, and he could breathe freely through the nostril. On the 5th of May he was still well.

Case 5.—James S., aged 60, came under my care on the 10th of May, 1866. He had been the subject of nasal polypi in both nostrils for about five years, and had been operated upon three times. Both nostrils were completely filled, no passage existing through either side. Tannin was ordered, and on the 20th of June he could blow through both nostrils, no signs of the disease existing. On the 10th of July he was quite well, the nose looking as healthy as it could be.

Case 6.—George G., aged 56, came under my care at Guy's Hospital on Oct. 8th, 1866. He had had polypi of both nostrils for some years. He was operated upon in Nov., 1865, and again in April, 1866. When he came under my notice, both nostrils were completely filled with small polypi. Tannin was ordered as a snuff, and in two weeks the nose was clear, no signs of disease existing. I saw him one month subsequently, when he was well.—*Lancet, Feb.* 23, 1867, *p.* 235.

110.—AN INGENIOUS BULLET DETECTOR.

A very ingenious piece of mechanism for the detection and extraction of bullets in wounds has been devised by Mr. Sylvan De Wilde. It seems that at the time Garibaldi was suffering from the effects of an undetected bullet in his limb, and pained by the fruitless efforts of operators to detect it, it occurred to several individuals of a philosophic turn of mind that electricity might very well be employed in the detection of metallic substances lodged within the human tissues. In France, M. Edmond Langlois, M. Favre, and Dr. Lecompte of the French Army Medical School at Val-de-Grâce, assisted by M. Rhumkoff, all made use of it in the elaboration of suggestions on the point. There is this manifest advantage, that the structures of the body are non-conductive—a fact that renders the action of the electric current more perfect.

Mr. De Wilde has apparently produced the most practical result; and his instruments have been submitted to the naval and military authorities, who have made a complimentary report about them. The apparatus consists of a probe and forceps, a battery, and an alarum, contained in a box eleven inches long by three broad, and two inches and a half deep. The elements for the generation of a current, which remains constant for some weeks, are zinc and carbon. The probe, consisting of two steel wires, insulated from each other, is connected with an electric horse-shoe magnet and a bell, and when (introduced into the wound) it touches the bullet the circle is completed, and the bell rings. The forceps act on the same principle, and are intended first to detect, then to seize, the bullet. They have curved points, and not pallets or spoons. The points of the probe are kept sheathed on introduction to a wound, and not uncovered till the supposed bullet is felt. This is effected by means of a sliding tube. The advantages of Mr. De Wilde's probe over others of its kind are very marked, and the army and navy officers will no doubt find it a great aid. The probe is a sensitive artificial finger, which enters deeply into the tissues, and gives the signal at once when it detects the hidden source of mischief below.—*Lancet, May* 11, 1867, *p.* 573.

INDEX TO VOL. LV.

PAGE.

Abscess, Mr. Lister on the use of carbolic acid in 149
Abscesses, scrofulous, Dr. Balman on the treatment of 52
Acetic acid, Drs. Broadbent and Randall's case of large cancerous tumour treated by 9
——— Mr. Moore on the treatment of primary cancer by 8
——— Mr. Stewart on the injection of scirrhus with 11
Acupressure, Sir J. Simpson on the progress of 205
——— Dr. Dunlop on its value in street surgery 210
——— Dr. Pirrie's experience of 206
——— Mr. Tait on the value of 208
Acute inflammations, on the internal use of tartar emetic in 4
Age, importance of in diagnosis of skin diseases 276
Ague, quotidian, use of bromide of potassium in 389
Alkalies, use of in blood-poisoning 48
Allbutt, Dr. C., on the remedial uses of the prunus Virginiana 372
Alopecia areata, treatment of 282
American wild cherry, (prunus Virginiana) Dr. Allbutt on remedial uses of .. 372
Amputation at the shoulder-joint, Mr. Spence on 172
——— wounds, use of Dr. Richardson's styptic colloid in 198
Anæmia, Dr. Beard on its treatment by galvanism 74
——— syrup of the phosphates of iron, quinine, strychnia in 378
Anæsthesia, Dr. Arnold's hydrostatic atomiser for 396
Aneurism, popliteal, Mr. Teale, jun., on its treatment by wire compress .. 214
——— traumatic, Mr. Jones's case cured by compression 218
Antiseptic properties of the hyposulphites, Dr. Paul on the 377
Arnold, Dr. G. J., his hydrostatic atomiser, or exsufflator 396
Arsenic, its effects on the skin 280
Ashton, Mr. T. J., his instrument for injecting uterine and rectal cancer .. 10
Asthma, nervous, Bamberger on 118
——— spasmodic, use of bromide of potassium in 385
Atthill, Dr. L., on polypus uteri, and his modification of ecraseur for removal of 337

Balman, Dr. T., on the treatment of scrofulous diseases of external glands .. 51
Bamberger on nervous asthma 118
Bandages and splints, Mr. Startin on paraffo-stearine for 379
Basham, Dr. W. R., his sediment tube for urine 146
Beard, Dr. G. M., on electricity in anæmia, dyspepsia, and general debility .. 72
Begbie, Dr. J., on the therapeutic effects of bromide of potassium 382
Belcher, Dr. T. W., on the treatment of porrigo 283
Belladonna in severe colic and constipation, Dr. Murchison on 132
———, its effects on the skin 281
Bell's paralysis, Dr. Lyons's case of uncomplicated double 66
Benzine, or hydrophenyl, its use in hooping cough 124
Bichloride of mercury and styptic colloid, combination of 200

PAGE.
Bishop, Dr. E., on artificial support in certain forms of deafness 270
Bladder, Mr. Curling on atony of, from stricture of the urethra 236
Blindness of one eye, Mr. Walton on the advisability of operating for 255
Blister, use of cantharidine and styptic colloid as a 200
Blood-poisoning, Mr. Savory's cases of 21
——— on the predisposing causes of 40
——— use of alkalies in 48
Boils, use of iodine for 53
Bone-setters, Mr. Paget on cases cured by 185
Breast, Mr Bryant on retracted nipple as a symptom of disease of the .. 12
——— inflamed, use of local stimulation by iodine in 53
Broadbent and Randall, Drs., case of large cancerous tumour treated by acetic acid 9
Bronchitis, chronic, with heart disease, use of the prunus Virginiana in .. 374
——— gouty, Dr. Greenhow on 93
Bromide of potassium, Dr. Begbie on the therapeutic effects of 382
——— of potassium, its effects on the skin 280
Bryant, Dr. G. S., his modification of Sims's speculum 342
Bryant, Mr. T., his cases of ovariotomy, and ligature of the pedicle 368
——— ——— on retracted nipple as a symptom of disease of the breast .. 12
——— ——— on the treatment of polypus of the nose 398
Bubo, Mr. Hulke's treatment of 309
Bullet detector, ingenious, Mr. Sylvan De Wilde's 400

Calabar bean, Dr. Watson's cases of traumatic tetanus successfully treated by 54
Callender, Mr. G. W., on fatty degeneration of the diaphragm 126
Campbell, Dr. W. W., on diphtheria 128
Cancer, Drs. Broadbent and Randall's case treated with acetic acid 9
——— of the breast, retracted nipple as a sign of 15
——— of the orbit, epithelial, Mr. Hulke on 268
——— primary, Mr. Moore on the treatment of 8
——— use of Dr. Richardson's styptic colloid in 198
——— use of the liquor carbonis detergens in 382
——— uterine and rectal, Mr. Ashton's instrument for injecting 10
Cantharidine and styptic colloid, combination of 200
Capsicum, Dr. Lyons on its use in delirium tremens 66
Carbolic acid and styptic colloid, combination of 199
——— ——— in diphtheria. Mr. Sedgwick on the use of 131
——— ——— its use in the treatment of compound fracture 151
Carbuncles, use of iodine for 53
Cataract, Prof. Graefe on extraction of 238
——— Mr. Wells on extraction by the scoop 243
——— senile. Mr. Wells on the different operations for 249
Cervical canal, Dr. Tilt on constriction of the 331
Chlorate of quinia, Dr. Lyons on 379
Chloride of zinc and styptic colloid, combination of 200
Chlorosis, Sir Henry Marsh on 75
——— syrup of the phosphates of iron, quinine, and strychnia in .. 378
Cholera, use of bromide of potassium in 388
Chordee, Mr. Heath's treatment of 308
Chorea, hysterical, Dr. Murchison's case of 68
Cicatrices, old, use of iodine for 53
Colic and constipation, Dr Murchison on the effect of belladonna in severe .. 132
Compound fracture, Mr. Lister's method of treating 149
Compression in the treatment of traumatic aneurism 218
——— ——— metallic, in the treatment of popliteal aneurism 214
Conjunctivitis, phlyctenular, Dr. Williams's brown citrine ointment for .. 258
Corneal opacities, Prof. Rothmund on the absorption of 262
Creosote and styptic colloid, combination of 199
Croton oil, its effect on the skin 280
Croup, Dr. Watson on the treatment of the advanced stage of 115
Curling, Mr. T. B., on atony of the bladder from stricture 236

PAGE.
Davis, Dr R. P., his cases of poisoning by fluid extract of gelseminum .. 390
Deafness, Dr. Bishop on artificial support in certain cases of 270
——— Mr. Hinton's restoration of perforated and collapsed membrana tympani 272
Debility, syrup of the phosphates of iron, quinine, and strychnia in 378
Delirium tremens, Dr. Lyons on its treatment by capsicum 66
——— ——— Mr. Tyrrell on its treatment by Indian hemp 65
De Morgan, Mr. C., on dealing with ligatures applied to arteries 218
Donnan, Mr. J., his case of resuscitation from drowning 125
De Ricci, Mr. H. R., on sulphite of magnesia in zymotic diseases 3
Diabetes mellitus, Sir H. Marsh on the treatment of 137
——— use of bromide of potassium in 386
Diaphragm, Mr. Callender on fatty degeneration of the 126
Diarrhœa of enteric or typhus fever 1
Diphtheria, Dr. Campbell on the treatment of 128
——— Mr. Sedgwick on the use of carbolic acid in 131
Disinfectant, Dr. Paul on hyposulphite of soda as a 377
——— on the liquor carbonis detergens as a 382
Disinfectants, Dr. Letheby on the comparative value of 7
Drowning, resuscitation after two hours apparent death from 125
Duncan, Dr. J. M., on hemorrhage from fibrous tumour of the uterus .. 344
Dunlop, Dr. J., on acupressure as applied to street surgery 210
Dunne, Dr. F. W., his formula for tincture of podophyllin 378
Dyspepsia, Dr. Beard on the use of Faradization in 72

Ecraseur, Dr. Atthill's modification of for removal of intra-uterine growths .. 340
Eczema, Dr. Smith on the etiology of 285
——— acute, treatment of 282
——— chronic, treatment of 282
——— chronic, use of liquor carbonis detergens in 382
Editor of Medical Times and Gazette, on the pathology of tubercle 89
Endo-metritis, Dr. Miller on uterine scarification in cases of 334
Enlargements of the liver, Dr. Murchison on 133
Epileptiform disorders, bromide of potassium in 384
Epistaxis, Sir H. Marsh on 82
Epithelial cancer of the orbit, Mr. Hulke on 263
Erysipelatous inflammation of the skin, local stimulation by iodine in 53
Ether spray, Mr. Hicks's case of post-partum hemorrhage arrested by .. 330
Eulenberg, Dr. A., on the physiological and therapeutical action of narceia .. 375
Excision of the knee joint, Dr. Watson on 181
——— of the knee-joint, Dr. Watson's apparatus for after-treatment of .. 175
Extraction of cataract, Prof. Graefe on 238
——— of cataract by the scoop, Mr. Wells on 243

Faradization and galvanism, Mr. Sandham on 69
Fatty degeneration of muscle, Mr. Macnamara on 392
——— degeneration of the diaphragm, Mr. Callender on 126
——— heart, syrup of the phosphates of iron, quinine, and strychnia in .. 378
Favus, treatment of 282
Fever, typhoid, Dr. Johnson on the diarrhœa of 1
Fibrous tumours of the uterus, Dr. Duncan on hemorrhage from 344
Flannel, Dr. Fox on its effect in skin diseases 278
Forceps, obstetric, Dr. Hardie on the more frequent use of 321
——— obstetric, Dr. Inglis's improved 318
——— obstetric, Young's modification of Simpson's 326
——— and turning in contracted pelvic brim, Dr. Milne on 311
Foul breath, use of liquor carbonis detergens for 382
Fox, Dr. T., on the diagnosis of skin diseases 275
——— on influence of flannel and scratching 278
——— on medicinal rashes 280
Fracture, compound, Mr. Lister on the use of carbolic acid in 149
Frizell, Dr. S. B., his treatment of pruritus pudendi 343

PAGE.

Galvanism, Dr. Beard on its use in anæmia, dyspepsia, and general debility .. 72
——— Mr. Sandham on 69
Ganglions, use of local stimulation by iodine for 53
Glands, external lymphatic, local treatment of scrofulous diseases of 51
Gleet, Mr. Heath's treatment of 308
Gonorrhœa, Mr. Barwell's treatment at Charing Cross Hospital 307
——— Mr. Bryant's treatment at Guy's Hospital 303
——— Mr. Callender's treatment at St. Bartholomew's Hospital .. 304
——— Mr. Gascoyen's treatment at St. Mary's Hospital 306
——— Mr. Heath's treatment at University College Hospital 308
——— Mr. Hulke's treatment at Middlesex Hospital 309
——— Mr. Maunder's treatment at the London Hospital 303
——— Mr. Watson's "disinfectant treatment" 309
——— Mr. Wood's treatment at King's College Hospital 305
——— M.D.'s treatment of 310
Gouty bronchitis, Dr. Greenhow on 93
Græfe, Prof., on extraction of cataract 238
Greenhow, Dr. E. H., on gouty bronchitis 93

Hardie, Dr. J., on the management of the second stage of natural labour .. 321
Harding, Mr. W. on phenic acid in skin diseases 283
Healing by the first intention, Dr. Richardson on 200
Hemiplegia, Mr. Sandham on galvanism in 70
Hemorrhage, Sir. H. Marsh on 80
——— after tooth extraction, Dr. Richardson's styptic colloid in .. 196
——— from fibrous tumour of the uterus, Dr. Duncan on 344
——— from necrosis of upper maxilla, use of styptic colloid in 197
——— post partum, Mr. Hicks's case of arrested by ether spray 330
Hernia, inguinal, Mr. Hewett's case of strangulated congenital 220
Hewett, Mr. P., on strangulated congenital inguinal hernia 220
Hicks, Dr. B., his case of concealed accidental hemorrhage at full term .. 330
Hinton, Mr J., on restoration of perforated and collapsed membrana tympani .. 272
Holt, Mr. B., on the immediate treatment of stricture 229
Hooping-cough, Dr. Lochner on hydrophenyl or benzine in 124
——— use of bromide of potassium in 385
Hulke, Mr. J. W., his case of epithelial cancer of the orbit 263
Hydatids of uterus simulating pregnancy and labour, Mr. Ley's case of .. 328
Hydrophenyl, its use in the treatment of hooping-cough 124
Hydrostatic atomiser, or exsufflator, Dr. Arnold's 396
Hyposulphites, Dr. Paul on the antiseptic properties of the 377
Hysterical chorea, Dr. Murchison's case of 68

Indian hemp, Mr. Tyrrell on its use in delirium tremens 65
Inflammations, acute, Dr. Spender on the use of tartar emetic in 4
Intestinal irritability, Dr. Allbutt on the use of prunus Virginiana in .. 372
Intra-uterine growths, Dr. Atthill's modification of ecraseur for removal of .. 340
Iodide of cadmium and styptic colloid, combination of 200
——— of potassium, to prevent the catarrhal symptoms caused by 390
Inglis, Dr. A., his improved midwifery forceps 318
Inguinal hernia, Mr. Hewett's case of strangulated congenital 220
Iodine and styptic colloid, combination of 200
——— its use in scrofulous abscesses 52

Johnson, Dr. G., on the diarrhœa of typhoid fever 1
Joints, locked, Mr. Paget on the treatment of 186
——— muscular rigidity of, Mr. Paget on 187
——— muscular rigidity of in children, Mr. Paget on 188
——— use of iodine in chronic affections of the 53
Jones, Mr. S., his case of traumatic aneurism cured by compression .. 218
Jordan, Mr. F., on operation for nævus 287
Junor, Mr. J. B., his case of traumatic tetanus treated by tobacco infusion .. 62

PAGE.
Kidney, movable. Mr. Heckford's case of 147
Knee-joint, Dr. Watson's apparatus for the after-treatment in excision of .. 175

Labour, natural, Dr. Hardie on the more frequent use of the forceps in .. 321
——— natural, Mr. Ley's case of hydatids of uterus simulating 328
Lee, Mr. H., on syphilisation 302
Leibreich, Dr. R , his modification of the strabismus operation 259
Letheby, Dr., on the comparative value of disinfectants 7
Ley, Mr. R., his case of hydatids simulating pregnancy and labour 328
Ligatures, Mr. De Morgan's plan of dealing with 218
Liquor carbonis detergens 382
Lister, Mr. J., his new method of treating compound fracture, abscess, &c. .. 149
Lithotrity, Dr. Porter on the after-treatment of 226
——— ——— Mr. Clover's instrument for removal of detritus 227
——— ——— Mr. H. Thompson's cases of for 1866, with analysis 221
Liver, Dr. Murchison on enlargements of the 133
Lochiæ, hyposulphite of soda as a disinfectant 378
Lochner, Dr., on the treatment of hooping cough by benzine 124
Lumbago, severe, treated by galvanism 71
Lyons, Dr., his case of idiopathic tetanus treated by tobacco and nicotine .. 60
——— his case of pure uncomplicated double Bell's paralysis 66
——— on chlorate of quinia 379
——— on the syrup of the phosphates of iron, quinine, and strychnia .. 378
——— on the treatment of delirium tremens by capsicum 66

Macnamara, Mr. C., on fatty degeneration of muscle 392
Mania, acute, use of bromide of potassium in 384
Marsh, Sir H., his remarks on chlorosis and hemorrhage 75
——— on epistaxis 82
——— on the treatment of diabetes mellitus 137
Medicinal rashes, Dr. Fox on 280
Melancholia, use of bromide of potassium in 384
Membrana tympani, perforate, Dr. Bishop on artificial support in cases of .. 270
——— tympani, perforated and collapsed, Mr. Hinton's case of restoration .. 272
Mercurial inunction, its effects on the skin 280
Mercury, Dr. Wilks on its effects in syphilis 298
Microscope, Dr. Basham's sediment tube for collecting objects for 146
Midwifery forceps, Dr. Hardie on the more frequent use of 321
——— forceps, Dr. Inglis's improved 318
Miller, Dr. E. D., on the treatment of endo-metritis by uterine scarification .. 334
Milne, Dr. A., on turning *versus* long forceps 311
Mitral obstructions, Dr. Peacock on 89
Moore, Dr. W. D., his translation of Bamberger on nervous asthma 118
Moore, Mr. C W., on the treatment of primary cancer 8
Morphia and styptic colloid, combination of 200
——— use of narceine as a substitute for 376
Movable kidney, Mr. Heckford's case of 147
Murchison, Dr. C., his case of hysterical chorea 68
——— ——— on belladonna in severe colic and constipation 132
——— ——— on enlargements of the liver 133
Muscle, Mr. Macnamara on fatty degeneration of 392
Muscular rigidity of joints, Mr. Paget on 188

Nævus, Mr. Pridgin Teale on enucleation of 286
——— Mr. Jordan on the operation for 287
Narceine, Dr Eulenberg on the physiological and therapeutical action of .. 375
——— Dr. Oettinger on the properties of 376
——— ——— as a narcotic 377

PAGE.
Nasal polypi, Mr. Bryant on the use of tannin for 397
Nervous affections, Dr. Begbie on bromide of potassium in 383
——— asthma, Bamberger on 118
——— excitability, Dr. Allbutt on the use of prunus Virginiana in .. 372
Neuralgia, Dr. Beard on the use of galvanism in 73
——— facial, treated by galvanism 71
——— peripheric, Dr. Eulenberg on the use of narceine in 375
——— use of bromide of potassium in 390
Nicotine and tobacco, Dr. Lyons's case of tetanus treated by 60
Nipple, retracted, diagnostic value as a sign of disease of the breast .. 12

Occupations, effect of on skin diseases 276
Œdema, use of local stimulation by iodine for 53
Oettinger, Dr., on the therapeutical properties of narceine 376
Old sprains, Mr. Paget on the treatment of 190
Opacities of the cornea, Prof. Rothmund on absorption of 262
Ophthalmia, tarsal, Dr. Williams's brown citrine ointment for 258
Orbit, Mr. Hulke's case of epithelial cancer of the 263
Orchitis, Mr. Hulke's treatment of 309
Ovariotomy, Dr. Sims's case, pedicle secured by silver wire 365
——— Mr. Bryant's cases, ligature of the pedicle 368

Paget, Mr. J., on cases that bone-setters cure 185
Pain, neuralgic, Dr. Oettinger on the use of narceine in 376
Paraffo-stearine for bandages and splints, Mr. Startin on 379
Paralysis, Bell's, Dr. Lyons's case of pure uncomplicated double 66
Parasitic diseases, use of the liquor carbonis detergens in 382
Paul, Dr. C., on the antiseptic properties of the hyposulphites 377
Peacock, Dr., on diagnosis of obstructive mitral by a presystolic bruit 88
Permanganate of potash, use of in diphtheria 131
Phenic acid, Mr. Harding on its use in skin diseases 283
Phlyctenular conjunctivitis, Dr. Williams's treatment of 258
Pneumonia, Dr. Waters on the early physical signs of 109
——— Dr. Waters on the pathology of 105
Podophyllin, tincture of, Mr. Dunne's formula for 378
Poisoning by the fluid extract of gelseminum, Mr. Davis on 390
Polypus of the nose, Mr. Bryant on the use of tannin in 397
——— uteri, Dr. Atthill on, and modification of ecraseur for removal of .. 337
Popliteal aneurism, Mr. Teale, jun., on its treatment by the wire compress .. 214
Porrigo, Dr. Belcher on the diagnosis, prognosis, and treatment of 284
Porter, Dr. G. H., on the after-treatment of lithrotrity 226
Pregnancy and labour, Mr. Ley on hydatids of uterus simulating 328
Prunus Virginiana, Dr. Allbutt on the remedial uses of 372
Prurigo, treatment at University College Hospital 281
——— senilis, Mr Squire on 281
Pruritus pudendi, Dr. Frizell's treatment of 343
——— vulvæ, use of liquor carbonis detergens in 382
Psoriasis and eczema, occurrence of in cases of chronic bronchitis 101
Pyæmia, Mr. Savory on 18
——— Mr. Savory on the treatment of 43
——— clinical relation of pus to the production of 34
——— on the symptoms and local effects of 28
——— prognosis of 42

Quinia and styptic colloid, combination of.. 199

PAGE.

Retracted nipple as a symptom of disease of the breast, Mr. Bryant on .. 12
Richardson, Dr. B. W., on his new "styptic colloid" 192
Ringworm, Dr. Coster's treatment of 282
Rothmund, Prof., on the absorption of corneal opacities 262

Sandham, Mr. W. H., on faradization and galvanism 69
Savory, Mr. W. S., on pyæmia 18
Scabies, Mr. Hillier on the treatment of 282
Scarlatina, Dr. Lyons on chlorate of quina in 379
Scratching, Dr. Fox on its effect on skin diseases 279
Seat of diseases of the skin 277
Sedgwick, Mr. C., jun., on carbolic acid in diphtheria 131
Sediment tube, Dr. Basham's, for collecting urinary tube-casts, &c. .. 146
Scirrhous tumour of the breast, Mr. Stewart on injection with acetic acid .. 11
Scrofulous diseases of external glands, Dr. Balman on the treatment of .. 51
Shoulder-joint, Mr. Spence on amputation at the 172
Side-blindness, Mr. Walton on 256
Sims, Dr. J. M., his case of ovariotomy, the pedicle secured by silver wire .. 365
Simpson, Sir J. Y., on the progress of acupressure 205
Sisson, Dr. R. S., on the effects of iodide of potassium 390
Skin diseases, Dr. Fox on the diagnosis of 275
——— treatment of at University College Hospital 281
Sleeplessness, use of bromide of potassium for 382
——— use of narceine in 376
Small-pox, Dr. Lyons on chlorate of quina in 379
Smith, Dr. F., on the etiology of eczema 285
Speculum, Dr. Bryant's self-retaining 342
Spence, Mr. J., on amputation at the shoulder-joint 172
Spender, Dr. J., on the use of tartar emetic in acute inflammations 4
Splint, anterior suspension, Dr. N. R. Smith's 180
——— single rod suspension, Dr. P. H. Watson's 176
Splints, Mr. Startin on the use of paraffo-stearine for 379
Sprains, Mr. Paget on the treatment of 189
Squint, Dr. Leibreich's operation for 259
Startin, Mr. J., on paraffo-stearine for bandages and splints 379
Stewart, Mr. P., on the injection of scirrhus with acetic acid 11
Strabismus, Dr. Leibreich's modification of the operation for 259
Stricture of the cervix, Dr. Tilt on 331
——— of the urethra, Mr. Curling on atony of the bladder from 236
——— of the urethra, Mr. Holt's cases of immediate treatment of 229
Styptic colloid, Dr. Richardson's new styptic and adhesive fluid 192
——— its combination with medicinal substances 199
Sulphur, its effects on the skin 281
Sulphite of magnesia in zymotic diseases, Mr. De Ricci on the 3
——— of soda, its use in pruritus pudendi 343
Syphilis, Dr. Wilks on 287
——— Dr. Wilks on the effects of mercury in 298
Syphilisation, Dr. Wilks on 300
——— Mr. Lee on 302
Syphilitic skin diseases, treatment of 283
——— ulcers, indolent, use of bichloride of mercury and styptic colloid in .. 200
——— virus, Mr. H. Lee on the duality of the 302
——— virus, mode of introduction into the system 289
Syrup of the phosphates of iron, quinine, and strychnia, Dr. Lyons on the .. 378

Tait, Mr. L., on acupressure 208
Tarsal ophthalmia, Dr. Williams's brown citrine ointment for 258
Tartar emetic, Dr. Spender on its use in acute inflammations 4
Teale, Mr. T. P., jun., on removal of nævus by enucleation 286
——— on the treatment of popliteal aneurism by wire compress 214

PAGE.

Temperament in cases of skin disease 276
Tendons, Mr. Paget on the slipping of 186
Tetanus, idiopathic, Dr. Lyons's case successfully treated by tobacco and nicotine 60
——— traumatic, Dr. Watson's cases successfully treated by Calabar bean .. 54
——— traumatic, Mr. Junor's case successfully treated by tobacco 60
Thompson, Mr. H., his cases of lithotrity for 1866, with analysis 221
——— ——— on over distention and rupture of the urethra 235
Tilt, Dr. E. J., on constriction of the cervical canal 331
Tinea tonsurans, Dr. Coster's treatment of 282
Tobacco, case of traumatic tetanus successfully treated by 62
——— and nicotine, successful treatment of idiopathic tetanus by 60
Traumatic aneurism of the palm, Mr. Jones's case of 218
Tubercle, Editor of "Medical Times and Gazette" on the pathology of .. 89
Turning *versus* long forceps, in contracted pelvic brim, Dr. Milne on 311
Typhoid fever, Dr. Johnson on the diarrhœa of 1
Typhus and typhoid, Dr. Lyons on chlorate of quinia 379
Tyrell, Mr. H. J., on the treatment of delirium tremens by Indian hemp .. 65

Ulcer, irritable painful, use of morphia and styptic colloid in 200
——— open, use of Dr. Richardson's styptic colloid in 197
Ulcers, use of liquor carbonis detergens for 382
Union by the first intention, Dr. Pirrie's definition of 207
—— by the first intention, Dr. Richardson on 200
Urethra, Mr. Curling on atony of the bladder from stricture of 236
——— Mr. Thompson on over-distension and rupture of 235
——— stricture of, Mr. Holt's immediate treatment of 229
Urinary tube-casts, Dr. Basham's sediment tube for collecting 146
Uterine and rectal cancer, Mr. Ashton's instrument for injecting 10
——— fibrous tumours, Dr. Duncan on hemorrhage from 344
——— scarification in endo-metritis, Dr. Miller on the use of 334

Vaginal speculum. Dr. Bryant's self-retaining 342
Veins, varicose, Mr. Wood's new operation for 220

Walton, Mr. H., on operating for blindness of one eye 255
Waters, Dr. A. T. H., on pneumonia 105
Watson, Dr. E., his successful treatment of traumatic tetanus by Calabar bean . 54
——— on the treatment of the advanced stage of croup 115
Watson, Dr. P. H., his apparatus for the after-treatment in incision of knee-joint 175
Watson, Mr. S., on the treatment of gonorrhœa 309
Wells, Mr. J. S., on extraction of cataract by the scoop 243
——— on the different operations for senile cataract 249
Wilks, Dr. S., on syphilis 287
Williams, Dr. E., his treatment of tarsal ophthalmia and phlyctenular conjunctivitis 258
Wood, Mr. J., his operation for varicose veins 220
Wounds and local injuries, to guard against infection of blood 50
——— of the scalp, &c., Dr. Dunlop on the value of acupressure in 210
——— recent, use of Dr. Richardson's styptic colloid in 198
——— recent, use of chloride of zinc and styptic colloid in 200

Zymotic diseases, Mr. De Ricci on the sulphite of magnesia in 3

D. I. ROEBUCK, PRINTER, 14, TRINITY STREET, LEEDS.